Vol. 1 DECEMBER, 1918 No. 12

Journal

—OF THE—

American Ceramic Society

A Monthly Journal devoted to the Arts and Sciences Related to the Silicate Industries.

COMMITTEE ON PUBLICATIONS:

GEORGE H. BROWN, Editor
Rutgers College, New Brunswick, N. J.

L. E. BARRINGER, *Chairman*,
General Electric Co., Schenectady, N. Y.

A. V. BLEININGER,
Bureau of Standards, Pittsburgh, Pa.

H. RIES,
Cornell University, Ithaca, N. Y.

E. W. TILLOTSON,
Mellon Institute, Pittsburgh, Pa.

CONTENTS

Subject	*Page*
Officers for the Year 1918–'19	813
Officers of Local Sections, 1918–'19	814
Committees, 1918	814
Honorary Members	816
Active Members	816
Asssociate Members	820
In Memoriam	849
Contributing Members	850
Honor Roll—Members	853
Honor Roll—Student Branches	854
Rules of the Society	855
Publications	865
Annual Report of the Board of Trustees	866
Reports of Committees and Student Branches	868
In Retrospect	876
List of Technical Papers in Volume I	878
Index to Volume I	883

Published Monthly by the
AMERICAN CERAMIC SOCIETY

Publication Office
211 Church St., Easton, Pa.

Editorial Office
Rutgers College, New Brunswick, N. J.

SIX DOLLARS PER YEAR (Foreign Postage Additional) *SINGLE NUMBERS, SIXTY CENTS*

Entered as second-class matter, July 15, 1918, at the post office at Easton, Pa., under the Act of March 3, 1879.

Acceptance for mailing at special rate of postage provided for in section 1103, Act of October 3, 1917, authorized August 16, 1918.

Copyright, 1918, American Ceramic Society

American Ceramic Society

YEAR BOOK
1918

CONTENTS.

	Page.
Officers for the Year 1918–'19	813
Officers of Local Sections, 1918–'19	814
Committees, 1918	814
Honorary Members	816
Active Members	816
Associate Members	820
In Memoriam	849
Contributing Members	850
Honor Roll—Members	853
Honor Roll—Student Branches	854
Rules of the Society	855
Publications	865
Annual Report of the Board of Trustees	866
Reports of Committees and Student Branches	868
In Retrospect	876
List of Technical Papers in Volume I	878
Index to Volume I	883

OFFICERS.

For the Year 1918–1919.

President.

Homer F. Staley ..... Washington, D. C.

Vice-President.

A. F. Greaves-Walker ..... Baltimore, Md.

Secretary.

Charles F. Binns ..... Alfred, New York

Treasurer.

R. K. Hursh ..... Urbana, Illinois

TRUSTEES.

The four above named officers and

Adolph E. Hottinger, term expires 1919.
Earl T. Montgomery, term expires 1920.
R. D. Landrum, term expires 1921.
George H. Brown, Retiring President.

EX-PRESIDENTS AND WHERE MEETINGS HAVE BEEN HELD.

Herbert A. Wheeler	1899–1900	Columbus, Ohio
Karl Langenbeck	1900–1901	Detroit, Mich.
Charles F. Binns	1901–1902	Old Point Comfort, Va.
Ernest Mayer	1902–1903	Cleveland, Ohio
Edward C. Stover	1903–1904	Boston, Mass.
Francis W. Walker	1904–1905	Cincinnati, Ohio
William D. Gates	1905–1906	Birmingham, Ala.
Willard D. Richardson	1906–1907	Philadelphia, Pa.
Stanley G. Burt	1907–1908	St. Louis, Mo.
Albert V. Bleininger	1908–1909	Columbus, Ohio
Ross C. Purdy	1909–1910	Pittsburgh, Pa.
H. Ries	1910–1911	Trenton, N. J.
Charles Weelans	1911–1912	Chicago, Ill.
Arthur S. Watts	1912–1913	Washington, D. C.
Ellis Lovejoy	1913–1914	Wheeling, W. Va.
Cullen W. Parmelee	1914–1915	Detroit, Mich.
Richard R. Hice	1915–1916	Cleveland, Ohio
Lawrence E. Barringer	1916–1917	New York, N. Y.
George H. Brown	1917–1918	Indianapolis, Ind.

OFFICERS OF LOCAL SECTIONS, 1918.

Northern Ohio Section.

E. P. Poste, *Chairman* — Bryan A. Rice, *Secretary*
R. D. Landrum, *Councilor*

St. Louis Section.

H. A. Wheeler, *Chairman* — Gail R. Truman, *Secretary*
D. T. Farnham, *Councilor*

New England Section.

W. H. Greuby, *Chairman* — C. J. Hudson, *Secretary pro tem*
C. H. Kerr, *Councilor*

Central Ohio Section.

F. K. Pence, *Chairman* — John M. Morton, *Secretary*
A. S. Watts, *Councilor*

Chicago Section.

W. D. Gates, *Chairman* — Fred B. Ortman, *Secretary*
C. W. Parmelee, *Councilor*

New York State Section.

L. E. Barringer, *Chairman* — J. B. Shaw, *Secretary*
C. F. Binns, *Councilor*

Pittsburgh District Section.

R. R. Hice, *Chairman* — F. H. Riddle, *Secretary*
F. W. Walker, Sr., *Councilor*

COMMITTEES, 1918.

Committee on Publications.

L. E. Barringer, *Chairman*
G. H. Brown, *Editor*
H. Ries
A. V. Bleininger
E. W. Tillotson

Committee on War Service.

A. F. Greaves-Walker, *Chairman*
A. V. Bleininger
L. E. Barringer
A. S. Watts
C. H. Kerr
R. H. Minton
C. F. Binns
E. W. Washburn
R. T. Stull
R. D. Landrum

Committee on Membership.

R. C. Purdy, *Chairman*
R. D. Landrum
R. L. Clare
F. B. Ortman
T. H. Sant
R. H. Minton
R. D. Hatton
F. H. Riddle
F. K. Pence
J. B. Shaw

Committee on Standards.

M. F. Beecher, *Chairman*
C. H. Kerr
J. B. Shaw
E. P. Poste
E. E. F. Creighton
C. W. Berry
F. H. Riddle
R. M. Howe
C. F. Binns
H. Wilson
R. K. Hursh
F. A. Kirkpatrick
C. B. Harrop
G. H. Brown
R. T. Stull

Committee on Coöperation.

C. H. Kerr, *Chairman*
G. E. Barton
W. E. Emley
J. P. B. Fiske
W. D. Gates
C. T. Harris
E. Hart
F. R. Henry
D. F. Riess
K. Seaver
C. L. Sebring
F. W. Walker, Sr.

Committee on Rules.

C. W. Parmelee, *Chairman*
A. S. Watts
F. H. Riddle
S. G. Burt
A. F. Greaves-Walker

Committee on Local and Student Sections.

R. R. Hice, *Chairman*
W. D. Gates
M. E. Gregory
F. K. Pence
H. A. Wheeler

Committee on Chemical Exposition.

L. E. Barringer, *Chairman*
R. C. Purdy
C. H. Kerr
K. Seaver
C. F. Binns
P. H. Swalm
F. B. Ortman
R. D. Landrum
H. Schmidt
A. Staudt
H. Ries
R. T. Stull
R. H. Minton

Committee on Papers and Programs.

R. H. Minton, *Chairman*
A. A. Klein
R. T. Stull
P. H. Bates
E. P. Poste
A. E. Williams
C. E. Jackson
W. E. Emley
E. T. Montgomery
D. T. Farnham

Committee on Summer Session.

F. K. Pence, *Chairman*
C. W. Berry
C. D. Fraunfelter
E. Ogden
R. D. Landrum
J. W. Sanders

HONORARY MEMBERS.

English Ceramic Society, Mr. R. L. Johnson, President, Oulton Rocks, Stone, Staffordshire, England.

Storer, Mrs. Maria Longworth (Mrs. Bellamy Storer), Founder of the Rookwood Pottery Company, Cincinnati, Ohio.

Branner, John C., Ph.D., President, Leland Stanford Junior University.

ACTIVE MEMBERS.

Arnold, H. C., Urbana, Ill., Honor Roll.

Aubrey, Arthur J., Youngstown, Ohio, Assistant General Superintendent, Bessemer Limestone Company.

Babcock, Grover, Pittsburgh, Pa., Mellon Institute.

Barringer, L. E., Schenectady, New York, Engineer of Insulations, General Electric Company.

Bates, P. H., Pittsburgh, Pa., Chemist, Bureau of Standards.

Beecher, Milton F., Worcester, Mass., Refractory Engineer, Norton Company.

Binns, Charles F., Alfred, New York, Director, New York State School Clay-working and Ceramics.

Blair, Marion W., Thornton, West Virginia, Superintendent, Thornton Fire Brick Company.

Blair, William P., 824 B. of L. E. Bldg., Cleveland, Ohio, Secretary, National Paving Brick Manufacturers' Association.

Bleininger, A. V., Pittsburgh, Pa., Bureau of Standards.

Bloomfield, Charles A., Box 652, Metuchen, New Jersey, Treasurer, Bloomfield Clay Company.

Boeck, Percy A., 11 Broadway, New York City, Celite Products Company.

Brockbank, Clarence J., Niagara Falls, N. Y., Honor Roll.

Brown, George H., New Brunswick, New Jersey, Director, Department of Ceramics, Rutgers College.

Burt, S. G., 2349 Ashland Ave., Cincinnati, Ohio, Rookwood Pottery Company.

Cannan, Wm., Jr., 522 Allen St., Syracuse, New York, Onondaga Pottery.

Clare, Robert L., Woodbridge, New Jersey, Superintendent, Federal Terra Cotta Company.

Cowan, R. Guy, Cleveland, Ohio, Honor Roll.

Creighton, E. E. F., 27 Wendell Ave., Schenectady, New York, Consulting Electrical Engineer, General Electric Company.

Emley, Warren E., 3705 Keokuk St., Chevy Chase, D. C., Bureau of Standards.

Farnham, Dwight T., 3rd National Bank Building, St. Louis, Mo., Industrial Engineer.

Fickes, Walter M., 1882 Grantham Ave., S. E., Collingwood Station, Cleveland, Ohio, The Aluminum Rolling Mill Company.

Fiske, J. Parker B., Arena Bldg., New York City, Fiske and Company, Inc.

Frink, R. L., Lancaster, Ohio, President, Frink Laboratories.

Fulton, C. E., Creighton, Pa., Pittsburgh Plate Glass Company.

Galpin, S. L., 620½ Sherman Ave., Hutchinson, Kansas.

Garve, T. W., 320—17th Ave., Milwaukee, Wisconsin.

Gates, Ellis D., Peoples Gas Bldg., Chicago, Illinois, American Terra Cotta and Ceramic Company.

Gates, William D., Peoples Gas Bldg., Chicago, Illinois, President and General Manager, American Terra Cotta and Ceramic Company.

Geijsbeek, Samuel, 604 Blake McFall Bldg., Portland, Oregon, Consulting Chemical Engineer, Geijsbeek Engineering Company.

Gelstharp, Frederick, Creighton, Pa., Chemist, Pittsburgh Plate Glass Company.

Grady, Robert F., St. Louis, Mo., Manager, St. Louis Terra Cotta Company.

Greaves-Walker, A. F., Tudor Hall, University Parkway, Baltimore, Md., Representative, American Refractories Company.

Harrop, Carl B., Lord Hall, Ohio State University, Columbus, Ohio, Assistant Professor Ceramic Engineering.

Hart, Edward, Ph.D., Easton, Pa., Professor Chemistry, Lafayette College,

Henderson, H. B., 1538 North High St., Columbus, Ohio, Superintendent. Orton Pyrometric Cone Company.

Hice, Richard R., Sc.D., Beaver, Pa., State Geologist, Topographic and Geological Survey Commission of Pennsylvania.

Hill, Ercell C., 401 Vernon Ave., Long Island City, New York, Chemist, New York Architectural Terra Cotta Company.

Hope, Herford, Beaver Falls, Pa., Honor Roll.

Horning, Roy A., Beaver Falls, Pa., Honor Roll.

Hottinger, A. F., Chicago, Illinois, Northwestern Terra Cotta Company.

Howat, Walter L., Perth Amboy, N. J., Honor Roll.

Howe, Raymond M., Pittsburgh, Pa., Mellon Institute.

Humphrey, Dwight E., 103 Fourth St., Cuyahoga Falls, Ohio, Secretary, Portage Engineering Company.

Humphrey, Harold P., Washington, New Jersey, Washington Porcelain Company.

Hursh, Ralph K., Urbana, Illinois, Ceramic Department, University of Illinois.

Jackson, C. Edward, Wheeling, West Virginia, President, Warwick China Company.

Jones, Robert W., 62 Dudley Ave., Tompkinsville, N. Y., State Inspector of Mines and Tunnels.

Karzen, Samuel C., Uhrichsville, Ohio, American Sewer Pipe Company.

Kerr, Charles H., Southbridge, Mass., Director Research Laboratory, American Optical Company.

Kirk, Charles J., New Castle, Pa., President and General Manager, Universal Sanitary Manufacturing Company.

Kirkpatrick, F. A., Pittsburgh, Pa., Bureau of Standards.

Klein, A. Albert, Worcester, Mass., Research Laboratory, Norton Company.

Klinefelter, T. A., Box 519, Derry, Pa., Ceramic Engineer, Research Department, Westinghouse Electric & Manufacturing Company.

Krehbiel, J. F., 1538 North High St., Columbus, Ohio, Orton Pyrometric Cone Factory.

Landrum, R. D., Cleveland, Ohio, Manager Service Department, Harshaw, Fuller and Goodwin Company.

***Langenbeck, Karl,** 1625 Hobart St., N. W., Washington, D. C.

Loomis, George A., Corning, New York, Corning Glass Works.

Lovejoy, Ellis, Schultz Bldg., Columbus, Ohio, Manager, Lovejoy Engineering Company.

Mayer, A. E., Beaver Falls, Pa., Assistant Secretary, Mayer Pottery Company.

Minton, R. H., Metuchen, New Jersey, Superintendent, General Ceramics Company.

* Life member.

Montgomery, E. T., Detroit, Michigan, Research Manager, Jeffery-Dewitt Company.

Montgomery, Robert J., Rochester, New York, Bausch and Lomb Optical Company.

Moore, Joseph K., Cleveland, Ohio, Honor Roll.

Morris, George D., St. Louis, Mo., Evans and Howard Fire Brick Company.

Ogden, Ellsworth, Chelsea Road, Upper Arlington, Columbus, Ohio, Assistant of Research in Ceramic Engineering, Ohio State University.

Orton, Edward, Jr., Lt.-Col., Washington, D. C., Honor Roll.

Parker, Lemon, 3314 Morganford Road, St. Louis, Mo., Vice-President and Superintendent, Parker-Russell Mining and Manufacturing Company.

Parmelee, C. W., Urbana, Illinois, Ceramic Engineering Department, University of Illinois.

Pence, F. K., Zanesville, Ohio, Ceramic Engineer, American Encaustic Tiling Company.

Plusch, H. A., Philadelphia, Pa., Research Engineer, Abrasive Company.

Poste, Emerson P., Elyria, Ohio, Chemical Engineer, Elyria Enameled Products Company.

Potts, Amos, Mason City, Iowa, Mason City Brick and Tile Company.

Purdy, Ross C., Worcester, Mass., Research Engineer, Norton Company.

Radcliffe, B. S., 1515 Lumber Exchange Bldg., Chicago, Illinois, Midland Terra Cotta Company.

***Randall, T. A.,** Indianapolis, Indiana, Editor, "The Clayworker."

Richardson, W. D., 388 N. 8th Ave., Columbus, Ohio.

Riddle, F. H., Pittsburgh, Pa., Associate Ceramic Chemist, Bureau of Standards.

Ries, H., Ph.D., Ithaca, New York, Professor of Economic Geology, Cornell University.

Schurecht, H. G., Lord Hall, Columbus, Ohio, U. S. Bureau of Mines, Ohio State University.

Shaw, Joseph B., Alfred, New York, Assistant Director, New York State School of Clayworking and Ceramics.

Silverman, Alexander, Pittsburgh, Pa., Head, Department of Chemistry, University of Pittsburgh.

Simcoe, George, Box 108, Metuchen, New Jersey.

Spurrier, Harry, 479 Crane Ave., Detroit, Michigan, Chemist, Jeffery-Dewitt Company.

Staley, H. F., Washington, D. C., Bureau of Standards, Division VIII.

Stephani, William J., Crum Lynne, Pa., Superintendent, O. W. Ketcham Terra Cotta Company.

Stout, Wilbur, Columbus, Ohio, Ohio State University.

Stover, Edward C., 474 West State St., Trenton, New Jersey, Assistant General Manager, Trenton Potteries Company.

* Life member.

Stull, Ray T., Lord Hall, Columbus, Ohio, Chief Engineer, Ceramic Research Station, U. S. Bureau of Mines.

Teetor, Paul, Detroit, Michigan, Ceramic Engineer, Jeffery-Dewitt Company.

Tillotson, E. W., Ph.D., Pittsburgh, Pa., Mellon Institute.

Walker, Francis W., Beaver Falls, Pa., Secretary and Treasurer, Art Tile Company.

Walker, Francis W., Jr., Beaver Falls, Pa., Honor Roll.

Ward, J. W., 628 Main St., Latrobe, Pa., General Superintendent, Pittsburgh High Voltage Insulator Company.

Washburn, E. W., Ph.D., Urbana, Illinois, Professor Ceramic Engineering, University of Illinois.

Watts, Arthur S., Lord Hall, Columbus, Ohio, Professor Ceramic Engineering, Ohio State University.

Wheeler, Herbert A., 408 Locust St., St. Louis, Mo., Consulting Engineer.

Whitford, W. G., Chicago, Ill., Honor Roll.

Williams, Arthur E., Pittsburgh, Pa., Bureau of Standards.

Williams, Ira A., Seattle, Washington, Ceramist, Mines Station, U. S. Bureau of Mines, University of Washington.

FOREIGN ACTIVE MEMBERS.

Cronquist, Gustaf Werneisson, Rikstel 153, Helsingborg, Sweden.

Davis, N. B., 410 Union Bank Bldg., Ottawa, Canada, M. J. O'Brien, Ltd.

Keele, Joseph, Ottawa, Canada, Department of Mines, Mines Branch.

Knote, J. M., Sault Ste. Marie, Ontario, Canada, Mines Department, L. S. Corporation.

Takahashi, Kakuichiro, Hodogaya, Near Yokohama, Japan, General Superintendent, Nippon Garas Kogyo Kaisha.

Worcester, Wolsey, 1722—25 A St., W., Calgary, Alberta, Canada.

ASSOCIATE MEMBERS.

Abrams, Duff A., Chicago, Illinois, In Charge of Structural Materials Research Laboratory, Lewis Institute.

Acheson, Edward G., Niagara Falls, New York, President, The Acheson Company.

Ahlman, Louis F., 720 Electric Bldg., Cleveland, Ohio, Salesman, Harshaw, Fuller and Goodwin Company.

Allen, Edwin M., 208 S. LaSalle St., Chicago, Illinois, American Refractories Company.

Allen, F. B., Woodbridge, New Jersey, Honor Roll.

Anderson, George O., Parkersburg, West Virginia, Secretary and Treasurer, General Porcelain Company.

Anderson, Robert E., Worcester, Mass., Honor Roll.

Applegate, D. H., Jr., Red Bank, New Jersey, Manager, Crescent Brick Company.

Arbenz, Fred J. A., Chillicothe, Ohio, Manager, Florentine Pottery.

Arbogast, F. J., 154 Belmont Ave., Crafton, Pa., Salesman, Hachmeister Lind Chemical Company.

Arbogust, Charles O., 808 Lakeside Place, Chicago, Illinois, Erwin and Wasey.

Ashbaugh, Charles C., East Liverpool, Ohio, Secretary and Treasurer, West End Pottery Company.

Austin, Arthur O., 326 North 6th St., Barberton, Ohio, Chief Engineer, Ohio Insulator Company.

Austin, James L., 37 Banks St., Waltham, Mass., Ceramic Engineer, Waltham Grinding Wheel Company.

Ayars, Erling E., 2307 Elsinor Ave., Baltimore, Md., American Refractories Company.

Ayer, Kenneth R., Honor Roll.

Ayers, Elwood B., 7th St. and Tabor Road, Philadelphia, Pa., Philadelphia Textile Machinery Company.

Baccus, Mrs. Julia F., Cleveland, Ohio, Enameling Expert, Cleveland Metal Products Company.

Bacon, Charles C., Tacony, Philadelphia, Pa., Secretary, Ross-Tacony Crucible Company.

Bacon, Raymond F., Pittsburgh, Pa., Director, Mellon Institute, Honor Roll.

Baggs, Arthur E., Marblehead, Mass., Manager, Marblehead Pottery Company.

Bailar, John C., Golden, Colorado, Assistant Professor of Chemistry, Colorado School of Mines.

Bainbridge, Walter L., Newark, Ohio, Chemical Engineer, The American Bottle Company.

Baker, G. V., Barnard, New York, Superintendent, Pennsylvania Feldspar Company.

Balmert, Richard M., 1825 Franklin Ave., Portsmouth, Ohio.

Balz, George A., Perth Amboy, New Jersey, Manager, Didier-March Company.

Bardush, J. F., Grand Rapids, Michigan, Grand Rapids Refrigerator Company.

Barker, Charles E., Matawan, New Jersey, Atlantic Tile Manufacturing Company.

Bartells, H. H., Bessemer, Pa., Honor Roll.

Bartlett, Edward E., Sapulpa, Oklahoma, Bartlett-Collins Glass Company.

Barton, G. E., 227 Pine St., Millville, New Jersey, Chief Chemist and Technical Expert, Whitall Tatum Company.

Bassett, Leon B., Worcester, Mass., Ceramic Engineer, Norton Company.

Bates, Charles E., Galesburg, Illinois, Honor Roll.

Bedson, William, Lawrence Road, Trenton, New Jersey, Assistant Manager, Elite Pottery Company.

Bell, Fred S., 1318 Wright Bldg., St. Louis, Mo., Vice-President, Mandle Clay Mining Company.

Bell, M. Llewellyn, 901 South Ave., Wilkinsburg, Pa., Carnegie Steel Company, Braddock, Pa.

Bellamy, Harry T., Chicago, Illinois, Hawthorn Plant, Western Electric Company.

Benner, William J., Hebron, North Dakota, Honor Roll.

Bently, Louis L., Beaver Falls, Pa., Superintendent, Armstrong Cork Company.

Berger, William S., 1601 Woodburn Ave., Covington, Kentucky, Secretary, Cambridge Tile Manufacturing Company.

Bergmans, Carl, 263 West Main St., Zanesville, Ohio, Ceramist, American Encaustic Tiling Company.

Berry, Charles W., St. Louis, Mo., Chemist, Laclede-Christy Clay Products Company.

Best, Harold A., Ottawa, Illinois, Honor Roll.

Bish, H. A., Findlay, Ohio.

Bissell, G. F., Ottawa, Illinois, Chicago Retort and Fire Brick Company.

Blackmer, Edward L., St. Louis, Mo., Assistant Superintendent, Blackmer and Post Pipe Company.

Blake, Alfred E., Pittsburgh, Pa., Fellow and Assistant Professor, Mellon Institute.

Blewett, J. B., Wellsville, Ohio, McLain Fire Brick Company.

Blinks, Walter M., Kalamazoo, Michigan, Manager, Michigan Enameling Works.

Bole, G. A., Alfred, New York, Professor of Chemistry, Alfred University.

Booraem, J. Francis, 52 Vanderbilt Ave., New York City, Treasurer and Manager, American Enameled Brick and Tile Company.

Booze, M. C., Columbus, Ohio, U. S. Bureau of Mines.

Bosworth, Harold O., Denver, Colorado, President, Denver Fire Clay Company.

Boughey, Joseph, 584 Roosevelt Ave., Trenton, New Jersey, Manager, Porcelain Department, Chas. Engelhard, Newark, New Jersey.

Bowman, Oliver O., 2nd, Trenton, New Jersey, Ceramist, Trenton Fire Clay and Porcelain Company.

Bowman, William J. J., Trenton, New Jersey, Trenton Fire Clay and Porcelain Company.

Bowne, Edward, Cloverport, Kentucky, Murray Roofing Tile Company.

Bradshaw, A. R., Minerva, Ohio, Owen China Company.

Bragdon, William V., 2336 San Pablo Ave., Berkeley, California, "The Tile Shop."

Brain, George, Newcastle, Pa., Manager, Universal Sanitary Manufacturing Company.

Bramlett, Julian T., R. F. D. No. 1, Enid, Mississippi, General Manager, Bramlett Clay Property.

Brand, J. J. Fred, Box 472, Roseville, Ohio.

Brandt, George F., 458 Broadway, Bedford, Ohio, Superintendent, Bedford China Company.

Bray, Archie C., Helena, Montana, Assistant Superintendent, Western Clay Manufacturing Company.

Brewster, Robert, 2814 Cambridge Ave., Chicago, Illinois, Dental Porcelain Manufacturing Company.

Breyer, Frank G., Palmerton, Pa., Chief of Research Department, New Jersey Zinc Company.

Briggs, Leonard S., South River, New Jersey, National Fireproofing Company.

Brockmann, Edward A., 192 West Clark St., Chicago, Illinois, Salesman, Roessler and Hasslacher Chemical Company.

Broga, Wilson C., Worcester, Mass., Honor Roll.

Brogdon, J. S., 70½ Peachtree St., Atlanta, Georgia, Consulting and Manufacturing Chemist.

Brower, Fred W., Uhrichsville, Ohio, Belden Brick Company.

Brown, Davis, Bucyrus, Ohio, American Clay Machinery Company.

Brown, Edmund, Perrysburg, Ohio.

Brown, L. K., Zanesville, Ohio, Vice-President, The Burton Townsend Company.

Brown, Philip King, M.D., 925 Hyde St., San Francisco, California.

Brown, R. E., Utica, Illinois, Utica Fire Brick and Clay Company.

Brown, Richard P., Wayne Junction, Philadelphia, Pa., President, Brown Instrument Company.

Brown, Wilbur F., Muncie, Indiana, Honor Roll.

Browning, T. S., Vanport, Pa., McLain Fire Brick Company.

Brownlee, William K., Toledo, Ohio, President and General Manager, The Buckeye Clay Pot Company.

Bruner, Willard L., 196 Water St., Perth Amboy, New Jersey, Ceramic Chemist, Roessler and Hasslacher Chemical Company.

Brush, George S., 1112 Lexington Ave., Zanesville, Ohio, General Manager, The Brush-McCoy Pottery Company.

Bryan, M. L., Seattle, Washington, Superintendent Terra Cotta Department, Denny Renton Clay and Coal Company.

Bucher, E. G., 203 Sherman Ave., Pontiac, Illinois.

Bucher, L. R., Vandalia, Mo., Honor Roll.

Burns, Ray A., St. Louis, Mo., Engineer of Sales Department, Laclede-Christy Clay Products Company.

Burroughs, Francis H., Trenton, New Jersey, Assistant Chemist, Star Porcelain Company.

Burton, Charles G., Peru, Indiana, Manager, Peru Electric Company.

Butterworth, Frank W., Danville, Illinois, General Manager, Western Brick Company.

Byers, Louis L., Philadelphia, Pa., Honor Roll.

Cable, Davis A., East Sparta, Ohio, General Superintendent, U. S. Roofing Tile Company.

Cable, Miss Margaret K., Grand Forks, North Dakota, Instructor in Ceramics, University of North Dakota.

Callaghan, J. P., Sharon, Pa., Superintendent, Sharon Clay Products Company.

Campbell, A. R., Middlesex Ave., Metuchen, New Jersey, Federal Terra Cotta Company.

Carder, Frederic R., Corning, New York, Steuben Glass Works.

Carman, C. F., Berkeley Springs, West Virginia, President, National Silica Works.

Carrier, Augustus, Detroit, Michigan, Chemist, Detroit Dental Manufacturing Company.

Carter, Benjamin F., Peoria, Illinois, Honor Roll.

Carter, C. E., 119 Bridge St., Peoria, Illinois, General Manager, Carter Brick Company.

Casey, Charles L., Cambridge, Ohio, President, Guernsey Earthenware Company.

Casey, J. B., Colfax, Indiana, Vice-President and General Manager, Colfax Drain Tile Company.

Cassady, Bertram L., 614 Aten Ave., Wellsville, Ohio, Superintendent, McLain Fire Brick Company.

Cermak, Frank, 116 4th Ave., Schenectady, New York, Foreman, Porcelain Works, General Electric Company.

Chambers, A. R., 466 Greenwood Ave., Trenton, New Jersey, Manufacturer of Fire Brick.

Chandler, A. H., 1618 Frick Bldg., Pittsburgh, Pa., Manager, Refractories Department, Pittsburgh Plate Glass Company.

Chapin, F. H., 900 Schofield Bldg., Cleveland, Ohio, Manager, Hydraulic Press Brick Company.

Chapman, Miss Dorothy P., 31 Shattuck St., Worcester, Mass., Ceramic Division, Norton Company.

Chase, John A., Honor Roll.

Chatham, C. W., 1407 Arrott Bldg., Pittsburgh, Pa., Manager, Eagle-Picher Lead Company.

Cheney, M. B., Briggsdale, Ohio.

Child, J. L., Findlay, Ohio, Hancock Brick and Tile Company.

Chinery, Frank L., Cincinnati, Ohio, Eagle-Picher Lead Company.

Chormann, O. I., Major, Niagara Falls, New York, Honor Roll.

Christie, J. M., 1950 East 90th St., Cleveland, Ohio, Salesman, Roessler and Hasslacher Chemical Company.

Christman, C. E., Pittsburgh, Pa., President, Federal Enameling and Stamping Company.

Clark, A. B., Stanford University, California, Head, Department of Graphic Arts, Leland Stanford Junior University.

Clark, Harold E. (Address unknown.)

Clark, John, 292 Lockwood St., Astoria, New York, Superintendent, New York Architectural Terra Cotta Company.

Clark, William M., E. 152nd St., Cleveland, Ohio, Manager, Euclid Glass Division, National Lamp Works.

Clark, Willis H., Midland, Michigan, Dow Chemical Company.

Claudon, Charles F., Ottawa, Illinois, Superintendent, Federal Plate Glass Company.

Clayter, Frederic C., Pittsburgh, Pa., Honor Roll.

Cliff, Ray T., Sebring, Ohio, The Saxon China Company.

Cole, M. J., Logan, Ohio, Superintendent and Treasurer, The Logan Clay Products Company.

Conkling, Samuel O., Philadelphia, Pa., Superintendent, Conkling-Armstrong Terra Cotta Company.

Cook, Charles H., Trenton, New Jersey, Cook Pottery Company.

Cook, John H., Minerva, Ohio, The Owen China Company.

Cooke, May E., 1550 Clifton Ave., Columbus, Ohio.

Cooke, Raymond D., Terre Haute, Indiana, Chemist, Columbian Enameling and Stamping Company.

Coors, H. F., Golden, Colorado, Manager, Herold China and Pottery Company.

CoVan, H. E., 1961 East 116th St., Cleveland, Ohio, Price Electric Pyrometer Company.

Cox, Harold N., Silver Lake, New Jersey, Thomas A. Edison Interests.

Cox, S. Frank, Mt. Vernon, Ohio, Research Chemist, Pittsburgh Plate Glass Company.

Crane, Charles W., 17 Battery Place, New York City, Mining Fire Clays and Silica Sand.

Crawford, Edward A., Canastota, R. D., New York.

Crawford, J. L., 31 Watsessing Ave., Bloomfield, New Jersey.

Creusere, G. C., Perrysville, Ohio, Manager, Mohawk Clay Products Company.

Crew, H. F., Zanesville, Ohio, Honor Roll.

Cronin, W. Kress, 320 West 5th St., East Liverpool, Ohio, Standard Pottery Company.

Cunningham, Matthias F., Waltham, Mass., Superior Corundum Wheel Company.

Cutting, J. W., Cambridge, Mass, Superintendent, A. H. Hews Company.

Dailey, Ernest W., Utica, Mo., General Superintendent, Shale Hill Brick and Tile Company.

Danielson, Ralph R., Des Plaines, Illinois, Ceramic Chemist, Benjamin Electric Manufacturing Company.

Darling, James, Box 300, Kenova, West Virginia.

Darlington, Homer T., Box 736, Natrona, Pa., Metallurgical Engineer, Pennsylvania Salt Manufacturing Company.

Davenport, R. W., Detroit, Michigan, Jeffery-Dewitt Company.

Davis, Harold E., 115 Bacon St., Waltham, Mass., Superintendent, Waltham Grinding Wheel Company.

Davis, John B., D.D.S., 22 East Greenwood Ave., Lansdowne, Pa.

Davis, John H., 792 Beacon St., Boston, Mass.

Day, Arthur L., Ph.D., Sc.D., Washington, D. C., Director, Geophysical Laboratory.

Dean, Charles A., 79–12th Ave., Columbus, Ohio.

Deaver, L. A., 29 Dodge Ave., Akron, Ohio.

Dell, Jack M., 6100 Manchester Ave., St. Louis, Mo., Assistant Superintendent, Missouri Fire Brick Company.

DeVoe, Charles H., Old Bridge, New Jersey, Superintendent, Old Bridge Enameled Brick and Tile Company.

DeVol, E. M., Zanesville, Ohio, Superintendent, Zanesville Stoneware Company.

Dickey, Fred L., Kansas City, Mo., General Manager, W. S. Dickey Clay Manufacturing Company.

Dinsmore, B. B., Trenton, New Jersey, General Manager, Imperial Porcelain Works.

Dittmar, Carl, 518 Union Central Bldg., Cincinnati, Ohio, Resident Manager, Roessler and Hasslacher Chemical Company.

Dobbins, T. Monroe, Camden, New Jersey, Secretary and Treasurer, Camden, Pottery Company.

Dolley, Charles S., Fort Madison, Iowa, Chemical Engineer, Keramoid Manufacturing Company.

Dornbach, William E., Box 190, Baltimore, Md., American Refractories Company.

Dorst, Max, Honor Roll.

Drakenfeld, B. F., Jr., 50 Murray St., New York City, Treasurer, B. F. Drakenfeld and Company, Inc.

Dressler, Philip D'H., Box 516, Zanesville, Ohio.

Dufour, George F., Y. M. C. A., Hamilton, Ohio, Consulting Engineer.

Dunn, Frank B., Conneaut, Ohio, President and Treasurer, Dunn Wire Cut Lug Brick Company.

Durant, E. M., 825 East 7th St., Los Angeles, California, President, Pacific Sewer Pipe Company.

Duval, A. L., Washington, Pa., Chief Chemist, Hazel-Atlas Glass Company.

Earle, Robert W., Canal Dover, Ohio, Vice-President, Dover Manufacturing Company.

Ebinger, D. H., Jr., Columbus, Ohio, D. A. Ebinger Sanitary Manufacturing Company.

Eckert, E. W., Box 65, Derry, Pa., Electrical Engineer, Pittsburgh High Voltage Insulator Company.

Edgar, David R., Metuchen, New Jersey, Assistant General Manager, Edgar Brothers Company.

Ellerbeck, William L., D.D.S., 703 Boston Bldg., Salt Lake City, Utah, President and Manager, Nephi Plaster and Manufacturing Company.

Emrick, W. A., Derry, Pa., Assistant to the General Superintendent, Pittsburgh High Voltage Insulator Company.

Eskesen, Bennet K., Matawan, New Jersey, Superintendent, New Jersey Mosaic Tile Company.

Eskesen, E. V., 149 Broadway, New York City, General Manager, New Jersey Terra Cotta Company.

Evatt, Frank G., 705 Fulton Bldg., Pittsburgh, Pa., District Manager, Atlantic Terra Cotta Company.

Fackt, George P., Denver, Colorado, General Manager, Denver Terra Cotta Company.

Farren, Miss Mabel C., 3600 Forbes St., Pittsburgh, Pa., Private Studio.

Fenton, Harry W., Mogadore, Ohio, Assistant General Manager, Akron, Smoking Pipe Company.

Ferguson, Richard D., Lincoln, Nebraska, Honor Roll.

Ferguson, Robert F., Pittsburgh, Pa., Honor Roll.

Fettke, Charles R., Pittsburgh, Pa., Carnegie Institute of Technology.

Fisher, Douglas J., Sayreville, New Jersey, Sayre and Fisher Company.

Fisher, George P., Ottawa, Illinois, National Fireproofing Company.

Fitzpatrick, John, 533 10th St., Niagara Falls, New York, Carborundum Company.

Foersterling, Hans, Ph.D., Jamesburg, New Jersey, Second Vice-President, Roessler and Hasslacher Chemical Company.

Footitt, Frank F., Room 216, Ceramic Building, Urbana, Illinois, University of Illinois.

Ford, G. Bergen, Caudler Bldg., Atlanta, Ga., B. Mifflin Hood Company.

Forester, Herbert, Box 37, Cleveland, Ohio, Principal, Veritas Firing System Company.

Forman, L. P., Arnold, Pa., American Window Glass Company.

Forst, Arthur D., Trenton, New Jersey, President, Robertson Art Tile Company.

Forst, D. Parry, 73 North Clinton Ave., Trenton, New Jersey, Robertson Art Tile Company.

Fowler, William E., Paxtonville, Pa., Paxton Brick Company.

Franzheim, C. Merts, Wheeling, West Virginia, The Charles M. Franzheim Company.

Fraser, W. B., Dallas, Texas, President, Fraser Brick Company.

Fraunfelter, Charles D., Zanesville, Ohio, President, Ohio Pottery Company.

Freese, H. H., 446 South Union St., Galion, Ohio, Mechanical Engineer, E. M. Freese Company.

Frerichs, Wm. D., 111 Broadway, New York City, Federal Terra Cotta Company.

Frey, Frank A., Milwaukee, Wisconsin, Enameling Department, Geuder, Paeschke and Frey Company.

Fridricksen, Christian, Wheeling, West Virginia, Wheeling Tile Company.

Frink, Urban W., 17 Power House St., South Boston, Mass., Manager, New England Branch, E. J. Woodison Company.

Fritz, E. H., Box 510, Derry, Pa., Ceramic Engineer, Westinghouse Electric and Manufacturing Company.

Frost, Leon J., 11700 Shadeland Ave., Cleveland, Ohio, Chemist and Purchasing Agent, Enamel Products Company.

Fuhrmann, F. J. (Address unknown.)

Fuller, Ralph L., 1119 Guardian Bldg., Cleveland, Ohio, Harshaw, Fuller and Goodwin Company.

Fulper, William H., Flemington, New Jersey, Secretary-Treasurer, Fulper Pottery.

Fulton, Kenneth I., Portland, Indiana, Honor Roll.

Fulweiler, Walter H., 319 Arch St., Philadelphia, Pa., Chief Chemist, United Gas Improvement Company.

Gahris Willard I., Sebring, Ohio, Limoges China Company.

Galloway, Walter B., Philadelphia, Pa., President, Galloway Terra Cotta Company.

Garrison, Amos, 417 South First St. West, Salt Lake City, Utah.

Gates, A. W., Colchester, Illinois, President and Treasurer, Gates Fire Clay Company.

Gates, Major E., Terra Cotta, Illinois, Superintendent, American Terra Cotta and Ceramic Company.

Gavin, Gordon P., Kalamazoo, Michigan, Superintendent, Kalamazoo Sanitary Manufacturing Company.

Gaylord, George L., 14 Holland Ave., Westfield, Mass., General Manager, Vitrified Wheel Company.

Gehrig, Edward F., Detroit, Michigan, Research Engineer, Detroit Stove Works.

Geiger, Carl F., 7 Baltimore St., Dayton, Ohio, Chief Draughtsman and Engineer, The Manufacturers Equipment Company.

Geiger, Charles F., Department of Ceramics, Rutgers College, New Brunswick, N. J.

Geisinger, E. E., Rochester, New York, Chemist, The Pfaudler Company.

Gerber, Albert C., Toledo, Ohio, Honor Roll.

Gibbs, Arthur E., 1006 Widener Bldg., Philadelphia, Pa., Head of Research Department, Pennsylvania Salt Manufacturing Company.

Giesey, V. A., 318 Citizens Bldg., Cleveland, Ohio, President, National Refractories Company.

Gilbert, Frank W., Rochester, Pa., Pittsburgh Grinding Wheel Company.

Gildard, Warren R., Ballston Lake, New York, Research Laboratory, General Electric Company, Schenectady, N. Y.

Gillinder, James, 11 Orange St., Port Jervis, New York, Superintendent, Gillinder Brothers.

Gilmore, R. B., E. Liberty Branch, Y. M. C. A., Pittsburgh, Pa., Ceramic Engineer, Vesuvius Crucible Company.

Gladding, Augustus L., Lincoln, California, Gladding, McBean and Company.

Godfrey, Miss Lydia B., Grand View-on-Hudson, New York, Director, Glen Tor Keramic Studio.

Golding, Charles E., 217 South Warren St., Trenton, New Jersey, Manager, Trenton Department, Golding Sons Company.

Goldner, G. E., Dayton, Ohio, Constructing Engineer, Manufacturers Equipment Company.

Goldsmith, B. B., 19 East 74th St., New York City, Vice-President, American Lead Pencil Company.

Good, Harry N., Pittsburgh, Pa., Ceramic Engineer, Pittsburgh Testing Laboratory.

Gorton, Arthur F., Ph.D., Toledo, Ohio, Research Physicist, Buckeye Clay Pot Company.

Grafton, Charles O., Muncie, Indiana, Treasurer and General Manager, Gill Clay Pot Company.

Grainer, John S., Box 21, Spring Lake, Michigan, Challenge Refrigerator Company.

Grampp, Otto, 205 Farwell Ave., Milwaukee, Wis., Superintendent, A. J. Lindeman and Hoverson Company.

Grant, DeForest, 101 Park Ave., New York City, President, Federal Terra Cotta Company.

Grant, W. Henry, St. Marys, Pa., Elk Fire Brick Company.

Green, J. L., St. Louis, Mo., President, Laclede-Christy Clay Products Company.

Greene, R. W., Mayfield, Kentucky, Kentucky Construction and Improvement Company.

Greener, George C., 198 Clarendon St., Boston, Mass., Director, North Bennett Street Industrial School.

Greenwood, G. W., Uniontown, Pa., United Fire Brick Company.

Gregori, John N., Chicago, Illinois, Kiln Burner, Northwestern Terra Cotta Company.

Gregorius, Thomas K., Corning, New York, Ceramic Engineer, Corning Glass Works.

Gregory, M. Creveling, Corning, New York, Ceramic Engineer, Corning Brick, Terra Cotta and Tile Company.

Gregory M. E., Corning, N. Y., Proprietor, Corning Brick, Terra Cotta and Tile Co.

Grueby, William H., Boston, Mass, President and General Manager, Grueby Faience Company.

Guastavino, Rafael, Jr., Fuller Bldg., Broadway and 23rd St., New York City, President, R. Guastavino Company.

Gunniss, William H., Black Eagle Club, Great Falls, Montana.

Haaf, George, 1501 Milton Ave., Solvay, New York, General Foreman, Pass and Seymour, Inc.

Haeger, D. C., 262 Grant Place, Aurora, Illinois, President, Haeger Brick and Tile Company.

Haeger, E. H., Dundee, Illinois, Haeger Brick and Tile Company.

Haley, Mark A., Syracuse, New York, Onondaga Pottery Company.

Hall, Clarence A., 18 McPherson St., Mount Airy, Pa., Research Department, Pennsylvania Salt Manufacturing Company.

Hall, Herman A., Nelsonville, Ohio, Pulverized Fire Clay Company.

Hall, Robert T., East Liverpool, Ohio, Secretary and Treasurer, Hall China Company.

Hall, William C., 1302—3rd National Bank Building, Atlanta, Georgia, Vice-President, Atlanta Terra Cotta Company.

Hamilton, James, Trenton, New Jersey, Superintendent, Ideal Pottery of The Trenton Potteries.

Handke, Paul A., 260 S. Academy St., Galesburg, Illinois, Purington Paving Brick Company.

Hanna, Harold H., Crystal City, Mo., Pittsburgh Plate Glass Company.

Hansen, Abel, Fords, New Jersey, Proprietor and Manager, Fords Porcelain Works.

***Hansen, Harry M.,** Maplehurst, Metuchen, New Jersey.

Harbeck, H. F., Grand Haven, Michigan, President, Challenge Refrigerator Company.

Hardesty, B. D., Syracuse, New York, Iroquois China Company.

Harding, C. Knox, 6318 Stoney Island Blvd., Chicago, Illinois, Consulting Engineer.

Hardy, Isaac E., Momence, Illinois, Superintendent, Tiffany Enameled Brick Company.

Hare, Robert L., Mexico, Mo., A. P. Green Fire Brick Company.

Harker, H. N., East Liverpool, Ohio, General Manager, Harker Pottery Company.

Harper, John L., Niagara Falls, New York, Hydraulic Power Company.

Harris, Charles T., 356 Leader Building, Cleveland, Ohio, Secretary, Hollow Building Tile Manufacturers' Association of America.

Harvey, F. A., Syracuse, New York, Laboratory Physicist, Solvay Process Company.

Hasburg, John W., 1119 La Salle Ave., Chicago, Illinois, President, John W. Hasburg Company, Inc.

Hasslacher, Jacob, 100 William St., New York City, President, Roessler and Hasslacher Chemical Company.

Hastings, Francis N., Hartford, Conn., Hartford Faience Company.

Hatton, Richard D., 1673 Railway Exchange Bldg., St. Louis, Mo., Vice-President and General Manager, Laclede-Christy Clay Products Company.

Heilman, Karl J., Tiffin, Ohio, Proprietor, Tiffin Brick Company.

Heistand, Elza F., Muncie, Indiana, Superintendent, Crucible Department, Gill Clay Pot Company.

* Died October 13, 1918.

Helser, Perry D., Edgewood, Maryland, Honor Roll.
Helwig, Frank H., Trinidad, Colorado, Brick and Tile Company.
Henry A. V. (Address unknown.)
Henry, Frank R., M.D., Dayton, Ohio, Manager, Dayton Grinding Wheel Company.
Hepler, I. F., Narberth, Pa., Chief Engineer, General Refractories Company.
Herbst, Abram W., Canaan, Conn., New England Slag Company.
Herron, James H., 1364 West Third St., Cleveland, Ohio, Consulting Engineer.
Hess, Henry W., Toledo, Ohio, The Libbey Glass Company.
Hettinger, Edwin L., 1325 Mineral Spring Rd., Reading, Pa., Assistant Secretary and Purchasing Agent, T. A. Willson and Company, Inc.
Hibbins, Thomas A., Wellsville, Ohio, General Business and Sales Manager, The Stevenson Company.
Hipp, Ralph T., Massillon, Ohio, Massillon Stone and Fire Brick Company.
Hipp, William G., Massillon, Ohio, Secretary and General Manager, Massillon Stone and Fire Brick Company.
Hitchins, R. E., Olive Hill, Kentucky, General Manager, General Refractories Company.
Hoehn, F. J., Carlinville, Illinois, Honor Roll.
Hoffman, George E., Trenton, New Jersey, Secretary, Monument Pottery Company.
Holmes, Harold W., Detroit, Michigan, Honor Roll.
Hood, B. Mifflin, Atlanta, Georgia, President, Mifflin Hood Brick Company.
Hooper, Charles N., 4157 Western Blvd., Chicago, Illinois.
Hornung, Martin R., Shenango Pottery Co., Newcastle, Pa.
Horton, J. M., Sebring, Ohio, E. H. Sebring China Company.
Hostetler, G. R., Sugar Creek, Ohio, Superintendent, Sugar Creek Clay Products Company.
Hower, H. S., Pittsburgh, Pa., Professor of Physics, Carnegie Institute of Technology.
Hudson, Charles J., 39 Kingsbury St., Worcester, Mass., Special Investigator, Norton Company.
Hull, Addis E., Jr., Crooksville, Ohio, Ceramic Engineer, A. E. Hull Pottery Company.
Hung, Shen, 52 Woodruff Ave., Columbus, Ohio.
Hunt, F. Sumner, Chillicothe, Ohio, Honor Roll.
Ireland, Harley R., Brazil, Indiana, Assistant Secretary and Treasurer, Hydraulic Press Brick Company.
Irwin, Dewitt, East Liverpool, Ohio, Secretary, Potters' Supply Company.
Ittner, Warren W., 327 N. Illinois St., Belleville, Illinois, The Malinite Company.
Jackson, H. W., DuBois, Pa., General Manager, Jackson China Company.
Jacobs, W. M., Charleroi, Pa., Pittsburgh, Plate Glass Company.
Jacquart, Charles E., South River, New Jersey, Honor Roll.

Jeffery, Joseph A., Detroit, Michigan, President, Jeffery-Dewitt Company.

Jensen, A. Lawrence, 142–156 Green St., Brooklyn, New York, Empire China Works.

Jensen, Charles H., 142–156 Green St., Brooklyn, New York, President, Empire China Works.

Jeppson, George N., 286 West Boylston St., Worcester, Mass., Assistant Superintendent, Norton Company.

Johnson, A. A. V., 30 N. LaSalle St., Chicago, Illinois.

Johnston, John, 3759 W. Pine Blvd., St. Louis, Mo.

Johnston, Robert M., 707 Hamilton St., New Fairview Station, Detroit, Michigan.

Jones, Cecil, 132 Adair Ave., Zanesville, Ohio, American Encaustic Tiling Company.

Jones, Otis L., Ogelsby, Illinois, President and Manager, Illinois Clay Products Company.

Justice, Ithamar M., Dayton, Ohio, Vice-President, Manufacturers' Equipment Company.

Kalbfleisch, G. C., Tiffin, Ohio, Manager, Standard Manufacturing Company.

Kanengeiser, Fred R., Poland, Ohio.

Katzenstein, Leon, Worcester, Mass., Special Investigator, Norton Company.

Kebler, Leonard, Mt. Vernon, New York, Ward-Leonard Electric Company.

Keehn, Clarence C., Canandaigua, New York, Secretary and Assistant Manager, Lisk Manufacturing Company, Ltd.

Keeler, R. B., 2505 E. 54th St., Huntington Park, Los Angeles, California.

Keenan, J. Francis, 1007 Hoge Building, Seattle, Washington, General Manager, Denny-Renton Clay and Coal Company.

Keese, Homer G., Litchfield, Illinois.

Kempf, John R., Detroit, Michigan, Star Corundum Wheel Company.

Kendrick, Lucius S., 513 Bearinger Bldg., Saginaw, Michigan, Vice-President and General Manager, Central Michigan Clay Products Company.

Kent, G. G., Detroit, Michigan, Honor Roll.

Keplinger, Robert B., Canton, Ohio, Assistant General Superintendent, Metropolitan Paving Brick Company.

Kerr, W. B., Syracuse, New York, President, Iroquois China Company.

Keuffel, Carl W., Adams and Third Sts., Hoboken, New Jersey, Keuffel and Esser Company.

Kier, Samuel M., 2243 Oliver Bldg., Pittsburgh, Pa., President, Kier Fire Brick Company.

Kimble, Herman K., Vineland, New Jersey, Manager, Scientific Glass Department, Kimble Glass Company.

King, B. F., Colchester, Illinois, Manager, Brick and Tile Company.

King, Earl O., Box 190, Baltimore, Maryland, American Refractories Company.

Kleymeyer, H. C., Office 8, Furniture Bldg., Evansville, Indiana, General Manager, Standard Brick Manufacturing Company.
Kline, Z. C., Central Falls, Rhode Island, National Lamp Works.
Knapp, Ernest W., Y. M. C. A., Canton, Ohio.
Knight, M. A., East Akron, Ohio.
Knollman, Harry J., 28 South 34th St., Philadelphia, Pa.
Knowles, H. Homer, Box 427, East Liverpool, Ohio, Superintendent, Plants 1 and 2, Knowles, Taylor and Knowles Company.
Koch, A. L., Minneapolis, Minn., Honor Roll.
Koch, Charles F., Cincinnati, Ohio, National Sales Company.
Koch, Julius J., 3325 Carolina St., St. Louis, Mo.
Kohler, Walter J., Kohler, Wisconsin, President, J. M. Kohler Sons Company.
Kraus, Charles E., 66—87th St., Brooklyn, New York.
Kraus, Louis P., Jr., 66—87th St., Brooklyn, New York, Research Engineer, Babcock and Wilcox Company.
Krause, George, 149 So. 7th St., Zanesville, Ohio.
Krick, George M., Decatur, Indiana, General Manager, Krick Tyndall and Company.
Krieg, Henry F., 30 North La Salle St., Chicago, Illinois, William E. Dee Company.
Krieg, William G., 1515 Lumber Exchange Building, Chicago, Illinois.
Kruson, I. Andrew, Victor, New York, Locke Insulator Company.
Kurtz, John C., Rochester, New York, Bausch and Lomb Optical Company.
Kurtz, Thomas N., Claysburg, Pa., Standard Refractories Company.
Lacy, Miss Mattie Lee, Denton, Texas, College of Industrial Arts.
Laird, J. S., Ann Arbor, Michigan, Assistant Professor, Chemical Laboratory, University of Michigan.
Lambie, J. M., Washington, Pa., Vice-President and Assistant General Manager, Findlay Clay Pot Company.
Lamont, R. A., Jr., Salem, Ohio, General Manager, National Sanitary Company.
Landers, William F., Indianapolis, Indiana, Superintendent, U. S. Encaustic Tile Works.
Lardin, R. H., Creighton, Pa., Assistant Chemist, Pittsburgh Plate Glass Company.
Larkin, P. G., Denver, Colorado, Ceramic Chemist, Denver Terra Cotta Company.
Larkins, Samuel B., Salineville, Ohio, Superintendent National China Company.
Larson, Gustaf, 1426 Carroll Ave., Los Angeles, California, Los Angeles Press Brick Company.
Laughlin, Samuel O., Wheeling, West Virginia, President and General Manager, Wheeling Tile Company.
Lawson, Carl H., 3 Fraternal Ave., Worcester, Mass., Norton Company.

Lawson, Geo. G., 2525 Claybourn Ave., Chicago, Ill., Northwestern Terra Cotta Company.

Lawton, Alfred V., 929 Carteret Ave., Trenton, New Jersey.

Layman, Frank E., Milwaukee, Wisconsin, Cutler-Hammer Company.

LePage, Just, Willamina, Oregon, Head Burner, Pacific Face Brick Company.

Levings, G. V. B., Via Palisade, Nevada, Union Mines.

Lewis, E. S., 29 South LaSalle St., Chicago, Illinois, Secretary-Treasurer, Advance Terra Cotta Company.

Libman, Earl E., 912 West Nevada St., Urbana, Illinois.

Lillibridge, H. D., Zanesville, Ohio, American Encaustic Tiling Company.

Lin, Chi C., 22 Woodruff Ave., Columbus, Ohio.

Linbarger, S. C., Niagara Falls, New York, Carborundum Company.

Linder, Cyril S., Creighton, Pa., Pittsburgh Plate Glass Company.

Lindley, Jacob, Tiltonville, Ohio, Riverside Potteries Company.

Livingston, H. J., Buffalo, New York, National Grinding Wheel Company.

Lloyd, Harry, Irondale, Ohio, Colonial Clay and Coal Company.

Locke, F. M., Victor, New York, Manufacturer of Porcelain Insulators.

Loeffler, R. W., Frankfort, Indiana, Superintendent, Ingram-Richardson Manufacturing Company.

Long, George E., Jersey City, New Jersey, Vice-President Joseph Dixon Crucible Company.

Longenecker, H. L., Cambridge, Maryland, Manager, Cambridge Brick Company.

Lord, F. G., Lewiston, Pa., Sales Manager, Pennsylvania Pulverizing Company.

Louthan, William B., East Liverpool, Ohio, Manager, Louthan Supply Company.

Lovatt, John, 1308 Brunswick Bldg., Trenton, New Jersey, Kiln Builder.

Lucas, H. J., 2525 Claybourn Ave., Chicago, Illinois, Vice-President, Northwestern Terra Cotta Company.

Luke, Charles H., New Bethlehem, Pa., Climax Fire Brick Company.

Lumb, Carnote, F., 1119 Sunset Ave., Zanesville, Ohio, American Encaustic Tiling Company.

Luter, Clark A., Baltimore, Md., Chemist, Carr-Lowrey Glass Company.

Lyon, J. Boyd, St. Louis, Mo., Laclede-Christy Clay Products Company.

Maddison, E. A. (Address unknown.)

Maddock, A. M., Jr., Trenton, New Jersey, Vice-President, Thomas Maddock's Sons Company.

Maddock, Henry E., Trenton, New Jersey, John Maddock and Sons.

Maddock, John, Trenton, New Jersey, John Maddock and Sons.

Maicas, Oscar R., 1200 Hudson St., Hoboken, New Jersey, Sales Engineer, Didier-March Company.

Malinovszky, A., 316 Portland Ave., Belleville, Illinois, Chemical Engineer.

Malkin, William R., East Liverpool, Ohio, Salesman, B. F. Drakenfeld & Company, Inc.

Malm, Arthur T., 18 Orne St., Worcester, Mass., Factory Investigator, Research Laboratories, Norton Company.

Malsch, Werner, 100 William St., New York City, Ceramic Department Manager, Roessler and Hasslacher Chemical Company.

Maltby, Alfred, Corning, New York, Superintendent, Brick Terra Cotta and Tile Company.

Mandle, I., 1318 Wright Bldg., St. Louis, Mo., Secretary and Treasurer, The Mandle Clay Mining Company.

Mandle, Sidney, 1318 Wright Bldg., St. Louis, Mo., Assistant Treasurer, Mandle Clay Mining Company.

***Mandler, C. J.,** Toledo, Ohio, President, Allen Filter Company.

Manion, L. W., 1370 Greenfield Ave., S. W., Canton, Ohio, Designer and Builder of Industrial Furnaces.

Manor, John M., East Liverpool, Ohio, Manager, Golding Sons Company.

Marks, Melville, 29 Broadway, New York City, Moore and Munger.

Martens, Paul, Chrome, New Jersey.

Martin, S. C., Kittanning, Pa., Kittanning Brick and Fire Clay Company.

Martz, Joseph A., Honor Roll.

Mason, F. Q., East Liverpool, Ohio, Mason Color and Chemical Company.

Mauschbaugh, Henry J., 523 North Elizabeth St., Peoria, Illinois, Carter's Brick Yard No. 2.

Mayer, C. P., Bridgeville, Pa., C. P. Mayer Brick Company.

Mayer, Walter S., 1520 Third St., New Brighton, Pa., Assistant to the Manager, Mayer China Company.

Maynard, T. Poole, 1321-A Hurt Bldg., Atlanta, Georgia, Consulting Geologist.

Mellor, F. G., Wheeling, West Virginia, Warwick China Company.

Meritt, Myrtle E., Pittsburgh, Pa., Instructor in Ceramics, Carnegie Institute of Technology.

Metzner, Otto, Cincinnati, Ohio, Superintendent of Manufacture, Rookwood Pottery Company.

Middleton, Jefferson, 1317 Rhode Island Ave., Apartment No. 304, Washington, D. C., Statistician, U. S. Geological Survey.

Miller, Donald M., 633 Monmouth St., Trenton, New Jersey, Secretary, Crossley Machine Company.

Miller, Henry E., Chicago, Illinois, Chicago Wheel and Manufacturing Company.

Miller, Julius J., Pittsburgh, Pa., Koppers Company, Mellon Institute.

Miller, R. W., Lt., Indianapolis, Indiana, Honor Roll.

Milligan, Frank W., Parkersburg, West Virginia, Manager, General Porcelain Company.

Mills, H. F., Noblesville, Indiana.

Millsom, Walter C., Macomb, Illinois.

Miner, Harlan S., Gloucester City, New Jersey, Chief Chemist, Welsbach Company.

* Died December 1918.

Minor, Frederick K., Oliver Building, Pittsburgh, Pa., Sales Engineer, Celite Products Company.

Moncrieff, James W., Grand Rapids, Michigan, Honor Roll.

Moore, Earl J., Greenville, Ohio, Honor Roll.

Moore, H. W., Perth Amboy, New Jersey, Chief Chemist, Atlantic Terra Cotta Company.

Moorshead, T. C., Alton, Illinois, Chief Engineer, Illinois Glass Company.

Morgan, Fred A., Honor Roll.

Morris, Paul R., 300 East 9th Ave., Tarentum, Pa., Chemist, Pittsburgh Plate Glass Company.

Morrow, Robert P., 1513 Rockefeller Bldg., Cleveland, Ohio, Salesman, Harbison-Walker Refractories Company.

Morton, John M., Zanesville, Ohio, Superintendent, Mosaic Tile Company.

Moses, James, Trenton, New Jersey, Mercer Pottery Company.

Mossman, P. B., 315 Union Arcade Bldg., Pittsburgh, Pa.

Motz, W. H., Akron, Ohio, Secretary and Treasurer, Colonial Sign and Insulator Company.

Moulding, J. M., Momence, Illinois, Tiffany Enameled Brick Company.

Moulton, D. A., 811 Riverside Ave., Wellsville, Ohio.

Muckenhirn, Charles H., 550 Chalmer Ave., Detroit, Michigan, General Representative, Standard Sanitary Manufacturing Company, Pittsburgh, Pa.

Mueller, Theodore E., Louisville, Kentucky, Manager, Louisville Works, Standard Sanitary Manufacturing Company.

Muessig, C. Nick, East Liverpool, Ohio, Salesman, B. F. Drakenfeld Company, Inc.

Mulholland, V., 41 Arch St., Hartford, Conn.

Munshaw, L. M., Terra Cotta, Illinois, Ceramist, American Terra Cotta and Ceramic Company.

Murray, G. A., Honor Roll.

Myers, Charles H., 498½. Poplar St., Murray, Utah, Superintendent, Utah Fire Clay Company.

Myers, Scott P., Uhrichsville, Ohio, Superintendent, Robinson Clay Products Company.

McAllister, James E., Trenton, New Jersey, J. L. Mott Company.

McBean, Atholl, 311–317 Crocker Bldg., San Francisco, California, Secretary, Gladding McBean and Company.

McCann, James S., Streator, Illinois, Honor Roll.

McClave, J. M., 910 American Trust Bldg., Cleveland, Ohio, General Manager, American Fire Clay and Products Company.

McCormick, Oscar C., 7802 Carnegie Ave., Cleveland, Ohio, Chief Engineer, Clayworkers Equipment Company.

McCoy, Nelson, Roseville, Ohio, Vice-President and General Manager, Nelson McCoy Sanitary and Stoneware Company.

McCoy, William, 334 Adair Ave., Zanesville, Ohio, Mechanical Engineer, American Encaustic Tiling Company.

McDanel, Walter W., 532 13th Ave., New Brighton, Pa., Mould Maker, Bureau of Standards.

McDougal, Taine G., Flint, Michigan, Champion Ignition Company.

McDowell, J. S., Pittsburgh, Pa., Research Department, Harbison-Walker Company.

McDowell, S. J., Flint, Michigan, Ceramic Engineer, Champion Ignition Company.

McElroy, R. H., Dayton, Ohio, International Clay Machinery Company.

McGregor, John R., 208 S. La Salle St., Chicago, Illinois, Eagle-Picher Lead Company.

McHose, Malcolm M., Perth Amboy, New Jersey, Manager, L. H. McHose, Inc.

McKaig, W. Wallace, Cumberland, Maryland, McKaig Machinery Foundry and Supply Works.

McKee, Jay C., Riverside Ave., Wellsville, Ohio, Chief Clerk, McLain Fire Brick Company.

McKelvey, John H., St. Louis, Mo., Sales Manager, Laclede-Christy Clay Products Company.

MacKenzie, William G., Wilmington, Delaware, Manager, Golding Sons Company, Delaware Department.

McKinley, J. M., Curwensville, Pa., Crescent Refractories Company.

McLaughlin, John, Box 31, Tiltonsville, Ohio, Wheeling Sanitary Manufacturing Company.

MacMichael, P. S., Auburn, Washington, President, Northern Clay Company.

McMillan, Herbert S., Detroit, Michigan, Manager and Secretary, Porcelain Enameling and Manufacturing Company.

McNaughton, Malcolm, Jersey City, New Jersey, Superintendent, Joseph Dixon Crucible Company.

McPadden, J. H., 26 Cortlandt St., New York City, Secretary Quigley Furnace Specialties Company.

McVay, T. N., Streator, Illinois, Streator Brick Company.

Nelson, Idris, 260 S. Academy St., Galesburg, Illinois, Chemist, Purington Paving Brick Company.

Niblock, Charles, Zanesville, Ohio, American Encaustic Tiling Company.

Nicely, Charles A., Watsontown, Pa.

Nielsen, M. P., 758 Taunten Square, Zanesville, Ohio.

Nies, Frederick H., D.D.S., 859 Bay Ridge Ave., Brooklyn, New York.

Niles, Glenn H., Room 602, 60 Wall St., New York City, Engineer, The Improved Equipment Company.

Nitchie, Charles C., Depue, Illinois, Chief Chemist, Mineral Point Zinc Company.

Noel, S. L., Bradenville, Pa., Pittsburgh High Voltage Insulator Company.

Nothstine, A. C., Bethesda, Maryland, Bureau of Chemistry.

Office, Leon R., Pittsburgh, Pa., Ceramic Chemist, H. Koppers Company, Mellon Institute.

Olsen, Peter C., 150 Nassau St., New York City.

Olsson, L. Zach, 130 Pearl St., New York City, Consulting Chemist.

Orth, Frank, 3437 Fir Street, Indiana Harbor, Indiana, Manufacturer, Sand Lime Brick.

Ortman, Fred B., 2525 Claybourn Ave., Chicago, Illinois, Northwestern Terra Cotta Co.

Osburn, Russell E., R. F. D. No. 1, Morris, Illinois, Developing Fire Clay.

Ossowski, Charles S., Cicero, Illinois, Vice-President and Superintendent, Chicago Vitreous Enamel Products Company.

Oudin, Charles P., 2327 Pacific Ave., Spokane, Washington, Manager, Pacific Fire Brick Company.

Overbeck, Miss Elizabeth G., Cambridge City, Indiana, Overbeck Pottery.

Owens, Francis T., Ridgway, Pa., Treasurer and General Manager, Ridgway Brick Company.

Owens, J. B., Zanesville, Ohio.

Parker, George W., 1624 Railway Exchange Bldg., St. Louis, Mo., Vice-President and General Manager, Russell Engineering Company of St. Louis.

Parkinson, J. C., 704 Third Ave., Tarentum, Pa., Chemist, Pittsburgh Plate Glass Company.

Pass, Richard H., Syracuse, New York, Chemist, Onondaga Pottery Company.

Paterson, Alexander, Clearfield, Pa., Secretary and Treasurer, Paterson Clay Products Company.

Pearson, Howard L., Mexico, Mo., Engineer, A. P. Green Fire Brick Company.

Pellerano, Silvio, 1837—71st St., Brooklyn, New York, Assistant Chemist, Chemical Laboratory, Hemming Manufacturing Company, Garfield, New Jersey.

Pelton, Herbert E., 1922 Dracena Drive, Los Angeles, California, Secretary and Treasurer, West Coast Tile Company, Inc.

Penfield, L. W., Willoughby, Ohio, Vice-President, American Clay Machinery Company.

Penfield, R. C., 1619 Conway Bldg., Chicago, Illinois, President and General Manager, American Clay Machinery Company.

Peregrine, Clarence R., Pittsburgh, Pa., General Superintendent, Macbeth-Evans Glass Company.

Pettinos, George F., 305 North 15th St., Philadelphia, Pa., Senior Partner, Pettinos Brothers, Pennsylvania Crucible Company.

Pfalzgraf, Charles F., Baltimore, Maryland, President, Baltimore Stamping and Enameling Company.

Pfau, Charles, Cincinnati, Ohio, President, Pfau Manufacturing Company.

Phillips, William L., 1016 San Antonio Ave., Alameda, California, N. Clark and Sons.

Pierce, O. W., Olean, New York, Olean Tile Company.

Pierce, Robert H. H., Box 516, Hazelwood, Pittsburgh, Pa., Chief Chemist, Harbison-Walker Refractories Company.

Pike, Robert D., 74 New Montgomery St., San Francisco, California, Consulting Chemical Engineer.

Pitcairn, William S., 104 Fifth Ave., New York City, Importer of China and Earthenware.

Pitcock, Lawrence, Crooksville, Ohio, Superintendent, Crooksville China Company.

Platt, Chauncey B., 406 Hubbell Bldg., Des Moines, Iowa.

Pohle, Louis, Trenton New Jersey, Ceramic Chemist, Monument Pottery Company.

Pohs, Frank, Rockford, Illinois, Vice-President and Manager, Rockford Vitreous Enameling and Manufacturing Company.

Polen, George A., 1012 Wooster Ave., Canal Dover, Ohio, General Superintendent, Robinson Clay Products Company.

Poole, Joshua, East Liverpool, Ohio, Manager, Homer-Laughlin China Company.

Porter, F. B., 204½ Houston St., Fort Worth, Texas, President, Fort Worth Laboratories.

Post, M. P., Commerce, Mo., Superintendent, Post Brothers.

Potter, William A., Richmond, California, Factory Manager, Pacific Porcelain Ware Company.

Powell, William H., 200 West 70th St., New York City, President, Atlantic Terra Cotta Company.

Preston, F. C., 509 Cuyahoga Bldg., Cleveland, Ohio, Vice-President and Sales Manager, Dover Fire Brick Company.

Primley, Walter S., Chicago, Illinois, Honor Roll.

Pulsifer, H. M., Manhattan Bldg., Chicago, Illinois, Constructor of Tunnel Kilns, George H. Holb and Company.

Purinton, Bernard S., Wellsville, Ohio, United States Pottery Company.

Pyatt, Frank E., 128 Sharon Ave., Zanesville, Ohio.

Quaintance, Charles F., Golden, Colorado, Secretary, Herold China and Pottery Company.

Radabaugh, N. B., 1572 Rydal Mount Road, Cleveland, Ohio, President, The Phoenix Hardening Equipment Company.

Rainey, E., R. F. D. 34, Peoria, Illinois, Superintendent of Yards, Carter Brick Company.

Rainey, Lloyd, Beaver, Pa., Superintendent, Fallston Fire Clay Company.

Ramsay, Andrew, Mt. Savage, Maryland, The Andrew Ramsay Company.

Ramsay, J. D., St. Marys, Pa., President and General Manager, Elk Fire Brick Company.

Rancke, Louis N., Lonaconing, Maryland, Consulting Engineer, Chemist.

Randall, James E., Indianapolis, Indiana, Junior Editor, "The Clayworker."

Rankin, George A., Route 1, Rosslyn, Virginia.

Rathjeins, G. W., Major, Honor Roll.

Raymond, Geo. M. (Address unknown.)

Rea, William J., Buffalo, New York, Superintendent, Buffalo Pottery Company.

Reagan, F. H., Victor, New York, General Manager, Locke Insulator Company.

Reed, Adam, Zanesville, Ohio, President, Peters and Reed Pottery Company.

Reed, Henry F., 426 Teece Ave., Bellevue, Pa., Assistant General Manager, Standard Sanitary Manufacturing Company.

Reeve, Howard T., 152 Main St., Southbridge, Mass, Chief Scientist, American Optical Company.

Reynolds, Pierce B., 433 Wyoming Ave., Kingston, Pa.

Rhead, Frederick H., Zanesville, Ohio, American Encaustic Tiling Company.

Rhead, Mrs. Frederick H., Zanesville, Ohio.

Rhead, Harry W., 144 Putnam Ave., Zanesville, Ohio, Designer, Roseville Pottery Company.

Rhoads, Ralph S., St. Louis, Mo., Evens and Howard Fire Brick Company.

Rice, Bryan A., Elyria, Ohio, Assistant Chemist, Elyria Enameled Products Company.

Richard, L. M., 919 Venezia Ave., Venice, California.

Richardson, Ernest, Beaver Falls, Pa., Vice-President and Treasurer, Ingram-Richardson Manufacturing Company.

Riess, Dewitt F., Sheboygan, Wisconsin, Secretary, Vollrath Company.

Rixford, Guy L., Honor Roll.

Robertson, Fred H., 809 North Alvarado St., Los Angeles, California, Los Angeles Pressed Brick Company.

Robertson, H. S., Pittsburgh, Pa., Honor Roll.

Robineau, S. E., 108 Pearl St., Syracuse, New York, President, Keramic Studio Publishing Company.

Robinson, Louis G., 4th and Park Aves., Newport, Kentucky.

Rochow, W. F., Pittsburgh, Pa., Chemical Engineer, Harbison-Walker Refractories Company.

Rockhold, Kenneth E., Zanesville, Ohio, Mark Manufacturing Company.

Rodgers, Eben, Alton, Illinois, Secretary and Treasurer, Alton Brick Company.

Roessler, Franz, 39 High St., Perth Amboy, New Jersey, Roessler and Hasslacher Chemical Company.

Rogers, Frederick W., Beaver Dam, Wisconsin, Malleable Iron Range Company.

Ross, Donald W., Washington, Pa., Findlay Clay Pot Company.

Rusoff, Samuel, Anderson, Indiana, National Tile Company.

Russel, John W., 522 Chestnut St., Columbia, Pa., President, Marietta Hollow Ware and Enameling Company.

Ryan, John J., McQueeny, Texas, Seguin Brick and Tile Company.

Salisbury, Bert E., 1810 W. Genesee St., Syracuse, New York, President, Onondaga Pottery Company.

Sanders, John W., Moundsville, West Virginia, Enameler, United States Stamping Company.

Sant, Richard C., East Liverpool, Ohio, Secretary, The John Sant and Sons Company.

Sant, Thomas H., East Liverpool, Ohio, Secretary-Treasurer, The John Sant and Sons Company.

Sassetti, F. L., 4147 Van Buren St., Chicago, Illinois.

Saunders, William E., 1401 Arch St., Philadelphia, Pa., Engineer, United Gas Improvement Company.

Savage, Harold R., Worcester, Mass., Refractories Chemist, Norton Company.

Schaeffer, John A., Joplin, Mo., General Superintendent, Eagle-Picher Lead Company.

Schermerhorn, Joseph A., 938 Carteret Ave., Trenton, New Jersey, Trenton Porcelain Company.

Schaulin, George M., Streator, Illinois, Honor Roll.

Schmid, A. F., Zanesville, Ohio, Superintendent, Zanesville Art Pottery Company.

Schmidt, Henry, 100 William St., New York City, Salesman, Roessler and Hasslacher Chemical Company.

Scholes, Samuel R., Ph.D., Rochester, New York, Chemist, H. C. Fry Glass Company.

Schory, Virgil S., 231 Hudson St., Tiffin, Ohio, Ceramic Engineer, Standard Sanitary Manufacturing Company.

Schulze, John F. W., 43 Ridge Drive, Yonkers, New York.

Schwetye, Fred H., St. Louis, Mo., Superintendent, Laclede-Christy Clay Products Company.

Scott, M. R., 102 Virginia Ave., Rochester, New York, Bausch and Lomb Optical Company.

Scott, W. C., Warrior, Alabama, Superintendent, Sibley Brick Company.

Seasholtz, J. M., Front and Spruce Sts., Reading, Pa., Owner, Porcelain Enameling Plant.

Seaver, Kenneth, Pittsburgh, Pa., Harbison-Walker Refractories Company.

Sebring, Charles L., Sebring, Ohio, General Manager, Sebring, Pottery.

Sewell, Sidney I., Pittsburgh, Pa., Laboratory Assistant, Bureau of Standards.

Sharp, Donald E., Hamburg, New York, Spencer Lens Company.

Sheehy, J. F., Newport, Kentucky, Superintendent and Manager, Alhambra Tile Company.

Sheerer, Mary G., New Orleans, La., Assistant Director, Newcomb Pottery.

Sherban, Daniel V., 1103 West 2nd St., Oil City, Pa.

Shoemaker, George W., Perrysville, Ohio,

Silver, Miss Anna K., 9 Hawthorne St., Worcester, Mass., Analytical Division, Norton Company.

Sinclair, Herbert, Trenton, New Jersey, General Manager, Star Porcelain Company.

Singer, L. P., Lincoln, California, Chemist, Gladding McBean and Company.

Sloàn, Alex, Box 410, Cumberland, Maryland, Manufacturing Chemist.
Smith, A. M., 401 Columbia Bldg., Portland, Oregon.
Smith, Harry W., Box 360, Cleveland, Ohio, Roessler and Hasslacher Chemical Company.
Smith, James M., New Castle, Pa., Treasurer, Shenango Pottery Company.
Smith, Maurice A., Jeanette, Pa., Vice-President and General Manager, McKee Glass Company.
Smith, Norman G., Brunswick, Me., Manager and Treasurer, Maine Feldspar Company.
Smith, Perry A., New Brighton, Pa., Secretary, A. F. Smith Company.
Smith, Will L., Jr., Chester, West Virginia, General Manager, Taylor Smith and Taylor Company.
Solon, A. L., 195 Fremont St., San Jose, California.
Solon, Marc, Trenton, New Jersey, General Manager, Mercer Pottery Company.
Sortwell, Harold H., 309 East John St., Champaign, Illinois.
Speir, Harry F., Cedarville, New Jersey, President, New Jersey Pulverizing Company.
Springe, Otto, St. Louis, Mo., Honor Roll.
Sproat, Ira E., Sebring, Ohio, Honor Roll.
Stallings, A. G. T., Mexico, Mo., Superintendent, A. P. Green Fire Brick Company.
Stanger, Frederick, Real Estate Trust Bldg., Philadelphia, Pa., Sales Manager, Enterprise White Clay Company.
Stangl, J. M., Dundee, Illinois, Superintendent, Haeger Potteries.
Stanley, Wm. W., New Brunswick, New Jersey, Wasson Piston Ring Company.
Stapler, Walter S., Stevens Pottery, Georgia, General Manager, Stevens Brothers and Company.
Staudt, August, Perth Amboy, New Jersey, President, Perth Amboy Tile Works.
Steinhoff, F. L., Chicago, Illinois, Honor Roll.
Stepan, Alfred C., Room 1551, Conway Bldg., Chicago, Illinois, Manager, Roessler and Hasslacher Chemical Company.
Stern, Newton W., 67 New Montgomery St., San Francisco, California, Secretary and Treasurer, Pacific Porcelain Ware Company.
Stevens, Douglas F., Cayuga, Indiana, Superintendent, Acme Brick Company.
Stevenson, Wm. G., Oregon, Illinois, Secretary-Treasurer, Ohio Silica Company.
Stewart, Andrew H., Pittsburgh, Pa., Mellon Institute.
Stockton-Abbott, Lyle, Hotel Plaza, Port Arthur, Texas, Engineer.
Stone, Charles A., Box 320, Kenova, West Virginia, Basic Products Company.
Stone, George C., 55 Wall St., New York City, New Jersey Zinc Company.
Stoneman, William N., Charleroi, Pa., Chemist, Macbeth-Evans Glass Company.

Stowe, Charles B., Cleveland, Ohio, President, National Fire Brick Company.

Sullivan, Eugene C., Ph.D., Corning, New York, Chief Chemist, Corning Glass Works.

Swalm, Phaon H., Trenton, New Jersey, 344 Bellevue Ave.

Sweely, B. T., Chicago, Illinois, Western Electric Company, Research Laboratories.

Swift, George C., 2029 E. 115th St., Cleveland, Ohio, Superintendent, Enamel Products Company.

Tamlyn, Walter I., 359 Crown St., Brooklyn, New York, Assistant Engineer with Ralph D. Mershon.

Tatton, Joseph, Y. M. C. A. Bldg., South Amboy, New Jersey.

Taylor, Royal W., 707—12th St., N. W., Canton, Ohio, Assistant Secretary and Chemist, Canton Stamping and Enameling Company.

Tefft, C. Forrest, Darlington, Pa., Manager, Darlington Clay Products Company.

Tefft, T. Dwight, Zanesville Ohio, Ceramist, Mosaic Tile Company.

Thomas, Chauncey R., 2336 San Pablo Ave., Berkeley, California, "The Tile Shop."

Thomas, George E., St. Louis, Mo., General Superintendent, Highlands Fire Clay Company.

Thomas, George W., East Liverpool, Ohio, President, R. Thomas and Sons Company.

Thomas, James R., Crawfordsville, Indiana, Manager, Standard Brick Company.

Thompson, Dale, East Liverpool, Ohio, Treasurer, C. C. Thompson Pottery Company.

Thompson, Harry M., Washington, Pa., Furnace Engineer, Hazel-Atlas Glass Company.

Thurlimann, Leo, 924 Fullerton Ave., Chicago, Illinois.

Thwing, C. B., Ph.D., Philadelphia, Pa., President, Thwing Instrument Company.

Tillotson, George S., 43 Water St., Tiffin, Ohio, Sterling Grinding Wheel Company.

Tilton, C. B., Worcester, Mass., Honor Roll.

Tilton, Earl, 1555 Belmont Ave., Columbus, Ohio, Columbus Forge and Iron Company.

Timmerman, Walter F., Kansas City, Kansas, Vice-President, Western Terra Cotta Company.

Tone, Frank J., Niagara Falls, New York, Works Manager, Carborundum Company.

Townsend, Everett, 344 Bellevue Ave., Trenton, New Jersey, General Manager, Robertson Art Tile Company.

Treischel, Chester, Schenectady, New York, General Electric Company.

Trifonoff, Boris, Zanesville, Ohio, American Encaustic Tiling Company.

Trowbridge, Prentiss S., 1337 Kings Highway, St. Louis, Mo., Hydraulic Pressed Brick Company.

Truby, H. A., Creighton, Pa., Research Department, Pittsburgh Plate Glass Company.

Truman, Gail R., 5801 Manchester Ave., St. Louis, Mo., Ceramic Chemist, St. Louis Terra Cotta Company.

Tucker, Gus M., Akron, Ohio, Chemist, Robinson Clay Products Company, Factory No. 1.

Türk, Karl, 126 S. Patterson Park Ave., Baltimore, Maryland, Porcelain Enamel and Manufacturing Company.

Turner, A. M., Sciotoville, Ohio, Scioto Fire Brick Company.

Turner, James, 1004 Stuyvesant Ave., Trenton, New Jersey, Manager, Cook Pottery Company.

Unger, J. S., 1054 Frick Annex, Pittsburgh, Pa.

Vance, George E., Springfield, Ohio, Safety Emery Wheel Company.

Vane, A. S., Bridesburgh, Philadelphia, Pa., The Abrasive Company.

Van Schoick, E. H., Honor Roll.

Vodrey, William E., East Liverpool, Ohio, General Manager, Vodrey Pottery Company.

Vogel, C. J., Irondale, Ohio, The McLain Fire Brick Company.

Vogt, C. C., Pittsburgh, Pa., Mellon Institute.

Vollkommer, Josef, Bessemer Bldg., Pittsburgh, Pa., Manager and President, Vitro Manufacturing Company.

Vollmer, August, Jr., St. Louis, Mo., St. Louis Pottery and Manufacturing Company.

Volz, Wm. J., St. Louis, Mo., Evens and Howard Fire Brick Company.

Wagner, C. L., Seattle, Wash,. Superior Portland Cement Company.

Wagner, Fritz, 1049 Oakdale Ave., Chicago, Illinois, Vice-President and Treasurer, Northwestern Terra Cotta Company.

Waite, V. R., 225 Hurt Bldg., Atlanta, Georgia.

Walcott, A. J., 41 Prince St., Rochester, New York, Research Physicist, Bausch and Lomb Optical Company.

Walden, Albert S., Cleveland, Ohio, Foreman, National Carbon Company.

*__Walduck, Charles L.,__ Worcester, Mass., Norton Company.

Walker, Charles H., 400 West 4th St., East Liverpool, Ohio, Assistant Superintendent, Homer Laughlin China Company.

Walker, Prescott H., Niagara Falls, New York, Honor Roll.

Walton, H. K., 59 Pearl St., New York City, New York Agent, Thwing Instrument Company.

Walton, Samuel F., Niagara Falls, New York, Assistant Ceramic Department, Carborundum Company.

Weaning, A. Marlowe, 1360 Nicholson Ave., Cleveland, Ohio, Cowan Pottery.

Weber, August, Jr., 1 Stratford Road, Schenectady, New York, President, Weber Electric Company.

* Died October 14, 1918.

Wegener, Harvey A., East Pittsburgh, Pa., Commercial Engineer, Westinghouse Electric Company.

Weigel, Chas., Hebron, N. Dak., Hebron Fire and Pressed Brick Company.

Weil, Edgar H., Cleveland, Ohio, Vitreous Enameling Company.

Wells, Harry B., Canton, Ohio, Superintendent, Belden Brick Company.

Whelden, Frank H., Detroit, Michigan, Detroit Grinding Wheel Company.

Whitaker, Fred A., Keasbey, New Jersey, Superintendent, General Ceramics Company.

White, Ray H., Niagara Falls, New York, Research Engineer, Norton Company.

Whitehead, Fred, 747 New York Ave., Trenton, New Jersey, Superintendent, Electrical Porcelain and Manufacturing Company.

Whitehead, Ralph R., Woodstock, New York, Byrdcliff Pottery.

Whitelaw, James C., 1220 Boren Ave., Seattle, Washington.

Whitmer, J. D., 9 Ball St., Zanesville, Ohio, American Encaustic Tiling Company.

Wigfield, C. L., 1415 Middle Ave., Elyria, Ohio, Elvria Enameled Products Company.

Wilder, T. M., Ravinia, Illinois, Proprietor, Wildwood Shop.

Wilkinson, George D., Chicago, Illinois, Vice-President, Cribben and Sexton Company.

Wilkinson, Samuel, Kenova, West Virginia, Assistant Superintendent, Sanitary Manufacturing Company.

Will, Otto W., Perth Amboy, New Jersey, Superintendent, Color Department, Roessler and Hasslacher Chemical Company.

Willetts, H. G., South 10th St., Pittsburgh, Pa., The Willetts Company.

Williams, John A., Prospect St. and P. & R. R. R., Trenton, New Jersey, Factory Manager, Mitchell-Bissell Company.

Wilson, Hewitt, Columbus, Ohio, Professor in Ceramic Engineering Department, Ohio State University.

Wood, A. T., Kenova, West Virginia, General Manager, Basic Products Company.

Woods, William J., Lewistown, Pa., Assistant General Manager, Pennsylvania Pulverizing Company.

Worsham, Herman, 1144 Prudential Bldg., Buffalo, New York, Sales Engineer, Carrier Engineering Corporation.

Worth, S. Harry, 404 Franklin Trust Bldg., Philadelphia, Pa., President, Pennsylvania Feldspar Company.

Wright, George, St. Louis, Mo., Factory Superintendent, Buck Stove and Range Company.

Wright, Joseph W., Pittsburgh, Pa., Bureau of Standards.

***Yates, Alfred,** Shawmut, Pa., General Manager, Shawmut Paving Brick Company.

Yearsley, Howard L., Haddonfield, New Jersey.

* Died April 17, 1918.

Yoshioka, Tosaku, Ph.D., 520 West 122nd St., New York City.
Young, C. B., Newark, Ohio, Secretary-Treasurer and General Manager, Ohio State Brick and Stone Company.
Young, George F., Zanesville, Ohio, Manager, Roseville Pottery Company.
Young, Russell T., Zanesville, Ohio, Secretary, Roseville Pottery Company.
Yowell, J. B., Dudley, Illinois, Honor Roll.
Zakharoff, Alexis, 514 W. 114th St., New York City.
Zeiller, Oscar F., New York City, Secretary, B. F. Drakenfeld and Company, Inc.
Zimmerli, William F., Ph.D., Rochester, New York, Chemist, The Pfaudler Company.
Zopfi, Albert S., Toledo, Ohio, Secretary, Buckeye Clay Pot Company.
Zwermann, Carl H., 22 Wyoming St., Newark, Ohio.
Zwermann, Theodore, 113 Linden Ave., Newark, Ohio, Enameling Superintendent.

FOREIGN ASSOCIATE MEMBERS

Anderson, Olaf, Statsgeolog, Mineralogisk Museum, Kristiania, Norway, Norwegian Government Geologist, Director of Research Laboratory.
Barrett, Maurice, 17 Gledhow Ave., Leeds, England.
Bigot, A., Ph.D., 112 Ave. de Suffern, Paris, France, Refractories.
Boswell, P. G. H., Ph.D., The University, Liverpool, England, Refractories.
Broderick, J. C., Montreal, Quebec, Canada, Canadian China Clay Company.
Buckner, O. S., 787 Kaniyamura, Hiroshima, Japan, Norton Company.
Carter, Owen, Wykeham, Poole, England, Carter Encaustic Tile Works.
Cleverly, Wm. B., Jr., Avonmouth, near Bristol, England, cr H. M. Factory.
Cobb, John W., Leeds, Yorkshire, England, Professor, Fuel Department, The University.
Coulter, Allen S., Reisholz bei Dusseldorf, Germany, cr Deutsche-Carborundum Werke.
Cox, Paul E., 3 Avenue Alphand, Paris, France, cr Compagnie Generale des Meules Maxf Grinding Corporation, Chester, Mass.
Davidson, T. R., Box 700, Montreal, Canada, Thomas Davidson Manufacturing Company.
Deb, S., 45 Taugra Road, Calcutta, India, Manager, Calcutta Pottery Works.
DeLuze, Henri, Avenue de Poitiers, Limoges, France, Haviland Porcelain Company.
Dingledine, H. F., Aldershot, Ontario, Canada, Factory Manager, National Fire Proofing Company of Canada, Ltd.
Emery, George, 4th Ave., West, Hamilton, Ontario, Canada, Canadian Porcelain Company.
Foley, Fenwick D., Loch Lomond Road, St. John, N. B.
Fredriksson, Nils, Svedala, Sweden, Ceramic School.

Fujioka, Koji, Kyoto, Japan, Shofu Porcelain Manufacturing Company.
Gaby, F. A., 190 University Ave., Toronto, Canada, Chief Engineer, Hydro-Electric Power Company.
Goddard, W. D., Hamilton, Canada, Canadian Porcelain Company.
Griffin, Carl H., Wesseling bei Koeln, Germany, Deutsche Norton Gesselshaft.
Groocock, Miss Alice, 865 Bathurst St., Toronto, Canada, Toronto Technical School, Pottery Teacher.
Harvey, George R., 448 Barton St., Hamilton, Ontario, Canada, Vice-President and Manager, Canadian Hart Wheels, Ltd.
Haviland, Jean, Limoges, France, Haviland & Company.
Hayhurst, Walter, Woodland, Accrington, England.
Hirano, Kosuke, Tokyo, Japan, Tokyo-Koto-Koggo-Grakko.
Hodson, G. A., 58 Park Road, Loughborough, England, Managing Director, Hathern Station Brick and Terra Cotta Company, Ltd.
Horsley, Thomas N., Honor Roll.
Hoursouripe, J., Palantelen—F. C. C. G. B. A., Republica Argentina.
Hurlburt, Frederick H., 72 Howland Ave., Toronto, Ontario, Canada, Rochester Feldspar Mills.
Ide, Kiyoshi, Amagasaki City, Japan, The Amagaski Factory, Asahi Glass Company.
Kato, Mitsu, Uno-ko, Okayamaken, Japan, Managing Director, Uno Fire Brick Company.
Kemp, W. A., Toronto, Canada, Vice-President, Sheet Metal Products Company.
King, C. A., Near Leeds, Yorkshire, England, Farnley Iron Company, Ltd.
Kitamura, Y., Kyoto, Japan, Director and Chief Engineer, Shofu Industrial Company, Ltd.
Kondo, S., Tokio, Japan, Tokio Higher Technical School.
Kurahashi, T., P. O. Terasho, Shigaken, Japan.
Lauer, Frank E., 2389 Mance St., Montreal, Canada.
Love, Herbert G., 207 Hammond Bldg., Moose Jaw, Canada, Dominion Fire Brick and Clay Products Company, Ltd.
Lundgren, H. J., Peterboro, Ontario, Canada, Superintendent, Canada General Electric Company.
Lusby, Charles A., Amherst, Nova Scotia, Amherst Foundry Company.
Marson, Percival, Norton Park, Edinburgh, Scotland, Edinburgh and Leith Glass Works.
Mellor, J. W., Ph.D., Sandon House, Regent St., Stoke-on-Trent, England, Secretary, English Ceramic Society.
Millar, John B., Clayburn, B. C.
Misumi, Aizo, Tobata, near Moji, Japan, Asahi Glass Company.
Momoki, Saburo, 84 Kobayashi-Cho, Nagoya, Japan, Ceramic Engineer.
McMaster, Arthur W., Box 736, Sidney, Nova Scotia, Dominion Iron and Steel Company.

Okura, K., 84 Kobayashi-Cho, Nagoya, Japan, Directing Manager of Japan Porcelain Corporation.

Paulsen, Carl A., 45 Smallegade, Copenhagen F, Denmark.

Pike, Leonard G., Wareham, Dorsetshire, England, Pikes Clay Mines.

Ramsden, C. E., Honor Roll.

Rogers, Gregory L., Sault Ste. Marie, Canada, Ceramic Engineer, Algoma Steel Corporation.

Sailly, Paul, 64 Rue Franklin, Ivry-Port, Seine, France, Compagnie General D'Electricite.

Saxe, Charles W., Gatun, C. Z., Norton Company.

Segsworth, W. E., 103 Bay St., Toronto, Canada, Consulting Engineer, Pennsylvania Feldspar Company.

Shanks, Douglas, Barrhead, near Glasgow, Scotland, Shanks and Company, Ltd., Victorian Pottery.

Shanks, John, Barrhead, near Glasgow, Scotland, Shanks and Company, Ltd., Victorian Pottery.

Shanks, John A. G., Glasgow, Scotland, Killed in action, Oct. 3, 1917, Honor Roll.

Spier, Charles W., London, S. W., England, Director, The Morgan Crucible Company, Battersea Works.

Sweet, George, The Close, Wilson St., Brunswick, Victoria, Australia, Proprietor, Brunswick Brick, Tile and Pottery Works.

Thomas, Charles W., Clifton House, Old Swinford, Stourbridge, England, Honor Roll.

Tooth, W. E., Woodville, Burton-on-Trent, England, Director, Bretby Art Pottery.

Turner, W. E. S., D.Sc., Sheffield, England, Director Department Glass Technology, The University.

Umeda, Otogoro, Tokio, Japan, Shinagawa Hakurengwa-Kwaisha Shinagawa.

Villalta, J. F. R., Barcelona, Spain, American Clay Machinery Company.

Walker, E. E., Mitcham, Victoria, Australian Tesselated Tile Company.

Ward, S. Paul, Rancagua, Chile, S. A., Braden Copper Company.

Wyse, Henry T., 106 Braid Road, Edinburgh, Scotland, Art Master, Ladies' College.

Yamada, Sanjiro, Tokio, Japan, Factory Manager, Asahi Glass Company.

Yamamoto, Tamesburo, 2, Yorikicho, Osaka, Japan, President, Yamatame Glass Manufacturing Company, Osaka Yamasan and Company, Kobe.

Yuill, John W., 422 1st St., S. E., Medicine Hat, Alberta, Canada, Chemist.

"In Memoriam"

Shanks, John A. G. (Killed in Action)

Yates, Alfred

Walduck, Charles L.

Mandler, C. J.

Hansen, Harry (Died in Service)

CONTRIBUTING MEMBERS.

Abrasive Company, Tacony and Fraley Sts., Bridesburg, Philadelphia, Pa.
American Dressler Tunnel Kilns, Inc., 171 Madison Ave., New York City.
American Emery Wheel Works, Providence, Rhode Island.
American Encaustic Tiling Company, Zanesville, Ohio.
The American Porcelain Company, East Liverpool, Ohio.
American Terra Cotta and Ceramic Company, People's Gas Bldg., Chicago, Illinois.
American Trona Corporation, 724 South Spring St., Los Angeles, California.
The Ashland Fire Brick Company, Ashland, Kentucky.
Bausch and Lomb Optical Company, Rochester, New York.
Benjamin Electric Manufacturing Company, Chicago, Illinois.
Brick and Clay Record, 610 Federal St., Chicago, Illinois.
Buckeye Clay Pot Company, Toledo, Ohio.
The Canton Stamping and Enameling Company, Canton, Ohio.
Champion Ignition Company, Flint, Michigan.
The Colonial Company, East Liverpool, Ohio.
Cortland Grinding Wheel Company, Cortland, New York.
The Davidson-Stevenson Porcelain Company, East Liverpool, Ohio.
B. F. Drakenfeld and Company, Inc., 50 Murray St., New York City.
Dunn Wire Cut Lug Brick Company, Conneaut, Ohio.
East Liverpool Potteries Company, Wellsville, Ohio.
The Edgar Plastic Kaolin Company, Metuchen, New Jersey.
Elyria Enameled Products Company, Elyria, Ohio.
Findlay Clay Pot Company, Washington, Pa.
The French China Company, Sebring, Ohio.
Frink Pyrometer Company, Lancaster, Ohio.
The Golding Sons Company, East Liverpool, Ohio.
The Hall China Company, East Liverpool, Ohio.
Hanovia Chemical and Manufacturing Company, Chestnut St., and N. J. R. R. Ave., Newark, New Jersey.
Harbison-Walker Refractories Company, Pittsburgh, Pa.
The Harker Pottery Company, East Liverpool, Ohio.
The Harshaw, Fuller and Goodwin Company, Cleveland, Ohio.
Homer-Laughlin China Company, East Liverpool, Ohio.
Iroquois China Company, Syracuse, New York.
Jeffery-Dewitt Company, Detroit, Michigan.
Edwin M. Knowles China Company, Newell, West Virginia.
Knowles, Taylor and Knowles Company, East Liverpool, Ohio.
The Limoges China Company, Sebring, Ohio.
Louthan Supply Company, East Liverpool, Ohio.
Maine Feldspar Company, Auburn, Maine.

F. Q. Mason Color and Chemical Company, East Liverpool, Ohio.
Massillon Stone and Fire Brick Company, Massillon, Ohio.
Maxf Grinding Wheel Corporation, Chester, Mass.
The Mosaic Tile Company, Zanesville, Ohio.
D. E. McNicol Pottery Company, East Liverpool, Ohio.
T. A. McNicol Pottery Company, East Liverpool, Ohio.
Norton Company, Worcester, Mass.
Ohio Pottery Company, Zanesville,Ohio.
The Onondaga Pottery Company, Syracuse, New York.
Owen China Company, Minerva, Ohio.
Pennsylvania Salt Manufacturing Company, Pittsburgh, Pa.
Perth Amboy Tile Company, Perth Amboy, New Jersey.
The Pfaudler Company, Rochester, New York.
Pittsburgh High Voltage Insulator Company, Derry, Pa.
The Pittsburgh Plate Glass Company, Pittsburgh, Pa.
Potters Supply Company, East Liverpool, Ohio.
Roessler and Hasslacher Chemical Company, 100 William St., New York City.
John H. Sant and Sons Company, East Liverpool, Ohio.
The Saxon China Company, Sebring, Ohio.
The Sebring Pottery Company, Sebring, Ohio.
Smith-Phillips China Company, East Liverpool, Ohio.
Standard Pottery Company, East Liverpool, Ohio.
Star Porcelain Company, Trenton, New Jersey.
Steubenville Pottery Company, Steubenville, Ohio.
Streator Clay Manufacturing Company, Streator, Illinois.
The Taylor, Smith and Taylor Company, Chester, West Virginia.
R. Thomas and Sons Company, East Liverpool, Ohio.
C. C. Thompson Pottery Company, East Liverpool, Ohio.
The Trenle China Company, East Liverpool, Ohio.
Veritas Firing System, Prospect Laboratories, Trenton, New Jersey.
Vitro Manufacturing Company, Bessemer Bldg., Pittsburgh, Pa.
Vodrey Pottery Company, East Liverpool, Ohio.
Warwick China Company, Wheeling, West Virginia.
The West End Pottery Company, East Liverpool, Ohio.

MEMBERSHIP.

The preceding lists have been brought up-to-date, January 1, 1919. Owing to the well organized and executed campaign on the part of the Committee on Membership for new members, the enrollment of the Society has undergone an unusual and highly gratifying growth. This has been in spite of the disturbed conditions prevailing abroad and augurs well for the future welfare and prosperity of the Society.

The following analysis is interesting:

MEMBERSHIP, FEBRUARY 1, 1917.

Honorary members	4
Active members, resident	71
Active members, foreign	5
Associate members, resident	414
Associate members, foreign	43
TOTAL	537

MEMBERSHIP, FEBRUARY 1, 1918.

Honorary members	4
Life members	1
Active members, resident	79
Active members, foreign	9
Associate members, resident	568
Associate members, foreign	56
Contributing members	33
TOTAL	750

MEMBERSHIP, JANUARY 1, 1919.

Honorary members	3
Life members	1
Active members, resident	99
Active members, foreign	6
Associate members, resident	722
Associate members, foreign	72
Contributing members	73
TOTAL	976

HONOR ROLL—MEMBERS.

Allen, F. B.
Anderson, Robert E.
Arnold, Howard C.
Ayer, Kenneth R.
Bacon, R. F.
Balmert, Richard M.
Bartells, H. H.
Bates, Charles E.
Best, Harold A.
Brockbank, Clarence J.
Broga, Wilson C.
Brown, Wilbur F.
Bucher, L. R.
Byers, Louis L.
Carter, Benjamin F.
Chase, John A.
Chormann, O. I.
Clayter, Frederic C.
Cowan, R. Guy
Crew, H. F.
Dorst, Max
Ferguson, Richard D.
Ferguson, Robert F.
Fisher, G. P.
Fulton, Kenneth I.
Geiger, Chas. F.
Gerber, Albert C.
*Hansen, Harry
Helser, Perry D.
Hoehn, F. J.
Holmes, Harold W.
Hope, Herford
Horning, Roy A.
Hornung, M. R.
Horsley, Thomas N.
Howat, Walter L.
Hunt, F. Sumner
Jacquart, Charles E.
Kent, G. G.
Koch, A. L.
Martz, Joseph A.
Miller, R. L.
Moncrieff, James W.
Moore, Earl J.
Moore, Joseph K.
Morgan, Fred A.
Murray, G. A.
McCann, James S.
Orton, Edward, Jr.
Primley, Walter S.
Ramsden, C. E.
Rathjeins, G. W.
Rixford, Guy L.
Robertson, H. S.
Schaulin, George M.
Springe, Otto
Sproat, Ira E.
Steinhoff, F. L.
Thomas, Charles W.
Tilton, C. B.
Van Schoick, E. H.
Walker, Francis W., Jr.
Walker, Prescott H.
Whitford, Wm. G.
Yowell, J. B.

* Died in service.

HONOR ROLL—STUDENT BRANCHES.

New York State Student Branch.

Ayars, Lister
Blumenthal, George
Crawford, George
Hagar, Donald
Harrington, Henry W.
Kane, Donald
Kenyon, Spicer
King, Walter
Lobaugh, Frank E.
Negus, Wayland
Reid, W. Harold
Sheppard, Mark
Sherwood, Robert F.

Ohio State University Student Branch.

Blum, J. W.
Callahan, H. D.
Cramer, W. E.
Davis, H. E.
Dodd, C. M.
Foster, H. D.
Gregorius, J. S.
Gunther, F. W.
Hall, Rex
Hartford, F. M.
Jones, R. E.
Kirschner, C. F.
Koos, E. K.
Lintz, E. H.
Mauck, F. J.
Merritt, L. M.
Minor, J. A.
Minton, G. Z.
Ramsay, John
Robinson, H. A.
Shaw, A. E.
Sieverling, P. A.
Skinner, E.
Stephens, W. H.
Stowe, G. T.
Vance, E. D.
Watkins, R. T.
Zwerner, C. G.

University of Illinois Student Branch.

Baker, Earl B.
Bates, Charles E.
Byers, Louis L.
Carter, Benjamin F.
Chittenden, Robert M.
Christopher, Arthur B.
Davis, Raymond E.
Golden, Dios E.
Greenbaum, Charles S.
Hummeland, Ralph W.
Kennelley, Griffith S.
Kling, Carl L.
Leibson, Jacob S.
Moncrieff, James W.
Sortwell, Harold H.
Twells, Robert
Zalaski, John T.

RULES OF THE SOCIETY.

[Revised 1918.]

I.

OBJECTS.

The objects of the American Ceramic Society are to develop the ceramic arts and the sciences related to the silicate industries by means of meetings for the reading and discussion of papers, the publication of scientific literature, and other activities.

II.

MEMBERSHIP.

The Society shall consist of Honorary Members, Active Members, Associate Members, Affiliated Members, and Contributing Members.

Honorary Members must be persons of acknowledged professional eminence whom the Society wishes to honor in recognition of their achievements in ceramic science or art. Their number shall at no time exceed two per cent of the combined active and associate membership.

Active Members must be persons competent to fill responsible positions in ceramics. Only Associate Members shall be eligible to election as Active Members and such election shall occur only in recognition of attainments or of services in the science, technology, or art, of the silicate industries.

Associate Members must be persons interested in the silicate or allied industries.

Contributing Members must be persons, firms, or corporations, who, being interested in the Society, make such financial contributions for its support as are prescribed in Section III.

Honorary Members shall be nominated for election by at least five Active Members and approved by the Board of Trustees. Their nomination shall be placed before the Society at an annual meeting and to be elected they must receive the affirmative vote of at least ninety per cent of those voting, by letter ballot, at the next succeeding annual meeting.

To be promoted to active membership Associate Members must be nominated in writing by an Active Member, seconded by not less than two other Active Members, and approved by the Board of Trustees. Their nomination must be accompanied by a statement of their qualifications and to be elected they must receive an affirmative vote of the majority of the members of the Board of Trustees.

A candidate for associate membership must make application upon a form provided by the Board of Trustees, which shall contain a written statement

of the age and professional experience of the candidate and a pledge to conform to the laws, rules, and requirements of the Society. Such application must be endorsed by two Active Members of the Society as sponsors and must be approved by the Board of Trustees. The Board may act by letter ballot upon such application at any time, after which and upon payment of the fees and dues prescribed in Section III, an approved candidate may be enrolled on the appropriate list of the Society.

Affiliated Members are those members of a Local Section who are not otherwise connected with the Society. Their rights and privileges relate solely to the affairs of the Local Sections to which they belong.

Contributing Members may be enrolled on the appropriate list of the Society at any time upon the payment of the dues prescribed in Section III.

All Honorary Members, Active Members, Associate Members, and Contributing Members shall be equally entitled to the privileges of membership, except that only Active Members shall be entitled to vote and hold office. The roster of each of these grades of membership shall be printed separately in at least one publication issued by the Society annually. Any person may be expelled from any grade of the membership of the Society if charges signed by five or more Active Members be filed against him and if a majority of the Board of Trustees examine into said charges and sustain them. Such person, however, shall first be notified of the charges against him and be given a reasonable time to appear before the Board of Trustees or to present a written defense, before final action is taken.

III.

DUES.

Honorary Members shall be exempt from all fees or dues.

The initiation fee of Active Members shall be ten dollars and if this be not paid within three months after the date of election, the latter shall be null and void. The annual dues shall be fixed by the Board of Trustees and shall not exceed ten dollars, four dollars of which shall be a subscription to the *Journal of the American Ceramic Society*.

The initiation fee of Associate Members shall be five dollars, payable within three months after date of election. The annual dues shall be fixed by the Board of Trustees but shall not exceed five dollars, four dollars of which shall be a subscription to the *Journal of the American Ceramic Society*.

Affiliated Members are liable only for the dues and assessments of the Local Sections.

Contributing Members shall pay no initiation fee. The annual dues shall be fixed by the Board of Trustees, but shall not be less than twenty-five dollars, four dollars of which shall be a subscription to the *Journal of the American Ceramic Society*. The privileges of membership shall begin upon payment of the annual dues.

Any Active or Associate Member in arrears for over one year may be suspended from membership by the Board of Trustees until such arrears are

paid and in event of continued dereliction, may be dropped from the rolls. Active Members in arrears are not eligible to vote. The annual dues of Active and Associate Members are payable within three months succeeding the date of the annual meeting.

IV.

OFFICERS.

The affairs of the Society shall be managed by a Board of Trustees, consisting of a President, Vice-President, Honorary Secretary, Secretary, Treasurer, and five Trustees. The officers, other than the Honorary Secretary and three Trustees, shall be elected from the Active Members at the annual meeting and shall hold office until their successors are elected and installed. The retiring President shall serve as Trustee for two years.

The President, Vice-President, Secretary, and Treasurer shall be elected for one year and the Trustees for three years; and no President, Vice-President, or Trustee shall be eligible for immediate re-election to the same office.

The Board of Trustees may from time to time, within their discretion, elect any past Secretary of the Society as Honorary Secretary to perform such duties as they may designate.

The President shall have general supervision of the affairs of the Society under the direction of the Board of Trustees and shall perform such other duties as pertain to his office.

The Secretary shall be, under the direction of the President and Board of Trustees, the executive officer of the Society. He will be expected to attend all meetings of the Society and of the Board of Trustees, prepare the business therefor and duly record the proceedings thereof.

He shall see that all moneys due the Society are carefully collected and without loss transferred to the custody of the Treasurer. He shall carefully scrutinize all expenditures and use his best endeavor to secure economy in the administration of the Society. He shall personally certify the accuracy of all bills or vouchers on which money is to be paid and shall countersign the checks drawn by the Treasurer against the funds of the Society when such drafts are known by him to be proper and duly authorized by the Board of Trustees. He shall have charge of the books of account of the Society and shall furnish monthly to the Board of Trustees a statement of monthly balances. He shall present annually to the Board of Trustees a balance sheet of his books as of the 31st of January and shall furnish from time to time such other statements as may be required of him.

He shall conduct the correspondence of the Society and keep full records of the same. He shall transmit promptly to the Board of Trustees for their consideration all communications not of routine nature. He shall report promptly to all Active Members the results of all balloting on the business of the Society unless otherwise ordered by the Board of Trustees. He shall perform all other duties which may from time to time be assigned to him by the Board of Trustees.

The Secretary may be paid a salary to be determined by the Board of Trustees.

The Secretary shall furnish a suitable bond for the satisfactory performance of his duties.

The Treasurer shall receive all money and deposit the same in the name of the Society. He shall invest all funds, not needed for current disbursements, as shall be ordered by the Board of Trustees. He shall pay all bills when certified and audited as provided by these Rules or as ordered by the Board of Trustees. He shall make an annual report and such other reports as may be prescribed by the Board of Trustees. He shall furnish a satisfactory bond for the proper performance of his duties.

A vacancy in any office shall be filled by appointment by the Board of Trustees but the new incumbent shall not thereby be rendered ineligible for re-election to the same office at the next annual meeting. On the failure of any officer or any member of a committee to execute his duties within a reasonable time, the Board of Trustees, after duly warning such person, may declare the office vacant and appoint a new incumbent.

A majority of the Board of Trustees shall constitute a quorum, but the Board of Trustees shall be permitted to carry on such business as they may desire by letter.

V.

ELECTIONS.

At the annual meeting a Nominating Committee of five Active Members, not officers of the Society, shall be appointed.

At least sixty days before the annual meeting this committee shall send the names of the nominees to the Secretary, who will immediately send a copy of the same to each Active Member. Any five Active Members may act as a self-constituted Nominating Committee and present the names of any nominees to the Secretary, provided this is done at least thirty days before the annual meeting. The names of all nominees, provided their assent has been obtained, shall be placed on the ballot without distinction as to nomination by the regular or self-constituted Nominating Committee, and shall be mailed to each Active Member, not in arrears, at least twenty days before the annual meeting. The voting shall be confined to the names appearing on this ballot. The ballot shall be enclosed in an inner blank envelope and the outer envelope shall be endorsed by the voter and mailed to the Secretary. The blank envelope shall be opened by three scrutineers appointed by the President, who will report the result of the election at the last session of the annual meeting. A plurality of affirmative votes cast shall elect.

VI.

MEETINGS.

The annual meeting shall take place on the first Monday in February, or as soon thereafter as can be arranged, at such place as the Board of Trustees,

may decide, at which time reports shall be made by the Board of Trustees, Treasurer, and scrutineers of election, and the accounts of the Treasurer shall be audited by a committee of three appointed by the President. Ten active members shall constitute a quorum at any regular meeting and a majority shall rule unless otherwise specified.

The order of business at the annual meeting shall be:

1. President's address.
2. Reading of minutes of last meeting.
3. Reports of the Board of Trustees and Treasurer.
4. Old business.
5. New business.
6. Reading of papers.
7. Announcement of election of officers, Honorary and Active Members.
8. Installation of officers and new members.
9. Appointment of committees.
10. Adjournment.

Other meetings may be held at such times and places during the year as the Board of Trustees may decide, but at least twenty days' notice shall be given of any meeting.

The President shall appoint at the annual meeting a committee of five, to be known as the Summer Meeting Committee, whose duty it shall be to arrange for a summer excursion meeting at some suitable point. The expenses of the Summer Meeting Committee in arranging the program of visits and for printing, rooms, and facilities for meetings shall be borne by the Society.

VII.

STANDING COMMITTEES.

The following Standing Committees shall be appointed annually by the Board of Trustees:

1. Rules.
2. Publications.
3. Membership.
4. Standards.
5. Local and Student Sections.
6. Papers and Programs.
7. Coöperation.
8. War Service.

The Committee on Rules shall consist of five members. It shall receive all recommendations relating to changes of Rules and shall report upon the same to the Secretary for transmission to the Society. It shall have power to propose changes in the Rules of the Society.

The Committee on Publications shall consist of the Editor and four members. The duties of the Editor and Committee on Publications are defined under Article XI on Publications.

The Committee on Membership shall consist of at least five members and shall have the power to appoint sub-committees. Its function shall be to undertake systematically the enlargement of the membership of the Society amongst those interested in the silicate and allied industries.

The Committee on Standards shall consist of at least five members and shall have the power to appoint sub-committees. It shall submit written reports, resolutions, and recommendations, relating to tests of materials and products. The Committee may report at any regular meeting of the Society. For adoption, these reports, resolutions, and recommendations must be submitted in printed form to the members of the Society at least six months before a vote may be taken, during which time any amendments, changes, or corrections suggested by any member may with the approval of the Committee be incorporated in the report, resolution, or recommendation. The reports, resolutions, and recommendations as amended shall then be submitted by letter ballot to the Active Members. A two-thirds vote shall be required for adoption.

The Committee on Local and Student Sections shall consist of five members. Its duties shall be to promote the organization and welfare of Local and Student Sections.

The Committee on Papers and Programs shall consist of the Chairmen of the various Divisions, the Secretary of the Society, and such other persons as the Board of Trustees may deem advisable. Its duties shall be to procure papers and discussions for the meetings and publications of the Society. The Committee may require an abstract of any paper submitted before placing it upon a program.

The Committee on Coöperation shall consist of at least five members. Its duties shall be to promote the interests of the Society by coöperation with other societies and organizations and to secure recognition of the Society by any proper means.

The Committee on War Service shall consist of at least five members. Its duties shall be to investigate National problems pertaining to the silicate industries and to stimulate research and production.

VIII.

DIVISIONS.

Professional groups to be known as Divisions of the Society and to be organized from members of the Society may be authorized by the Board of Trustees for stimulating the growth and development of the Society, when such action shall seem wise and expedient. Any member of the Society may register in any Divisions of the Society in which he is interested.

The officers of a Division shall be a Chairman and a Recording Secretary. Officers of Divisions shall be elected annually by ballot at the last session

of the Division held during the annual meeting of the Society and shall take office at the close of the meeting at which they were elected. They shall hold office for one year or until their successors are elected. The Board of Trustees shall fill any vacancies occurring through death or resignation among the officers of a Division.

A Division shall have the right to make by-laws for its own government, which shall be subject to the approval of the Board of Trustees and must not be inconsistent with the Rules of the Society, and a committee to draw up such by-laws shall be appointed at the first meeting held by the Division.

Any Division may raise or collect funds to be expended for its own purposes and may have the entire management and control of said funds, in so far as said management and control does not conflict with any provisions of the Rules or with the Charter of the Society.

Any Division may be dissolved by the Board of Trustees for good and sufficient reasons.

IX.

LOCAL SECTIONS.

Local Sections, each carrying some distinguishing title prefixed to the words "Section of the American Ceramic Society," may be authorized by the Society.

The purposes of such sections shall be to strengthen and extend the work of the Society as defined in Section I of its Rules by more frequent meetings in local centers than are possible to the Society as a whole and by bringing the benefits of the work to persons who would not otherwise be reached.

Application for permission to form a Local Section must be in writing and signed by not less than ten members of the Society in good standing, residing in the general locality where the Section is to be formed, of whom one at least shall be an Active Member. To be considered at any given meeting an application must be filed with the Secretary at least thirty days prior to the date of the meeting and notice that the application is pending must appear in the program of the meeting. To be granted the application must receive the affirmative vote of two-thirds of those present. In event of affirmative action the Society will issue a charter to the applicants authorizing them to form a Section under the name proposed. Charters for Local Sections may be temporarily suspended by the Board of Trustees for cause, but no charter can be permanently rescinded except by vote of two-thirds of those present at a regular meeting of the Society, after due publication in the program of the meeting that the matter is pending.

Local Sections shall have power to make their own rules and by-laws except that they shall not pass any rule or by-law which is in conflict with the Rules of the Society.

The officers of Local Sections shall be a Chairman, a Secretary, a Councilor, and such others as the Section may prescribe. The duties of the Chairman and Secretary shall be such as usually pertain to those offices. The

Councilor shall be an Active Member of the Society. He shall be elected by the Local Section and it shall be his duty to advise the Section in all matters pertaining to its relations with the Society and to make an annual report to the Society regarding the work and status of the Section. The names of the Chairman, Secretary, and Councilor of each Section shall appear in the roster of the Society.

Any person interested in the silicate and allied industries is eligible to membership in a Local Section.

Local Sections shall have power to fix their own dues or assessments, such dues or assessments being in addition to and independent of the regular dues and assessments of the Society upon its members. No Section shall have authority to incur debt in the name of the Society or for which the Society may become liable.

X.

STUDENT BRANCHES.

Student Branches, each carrying some distinguishing title prefixed to the words "Student Branch of the American Ceramic Society," may be established in institutions in which regular courses of instruction in ceramics are maintained.

The purposes of such Student Branches shall be to strengthen and extend the work of the Society, as defined in Section I of the Rules, by enlisting the interest and support of students in ceramics while still in school and by stimulating the spirit of ceramic research among them.

Application to form a Student Branch in any institution must be in writing, signed by not less than five regularly enrolled students in good standing and endorsed by two or more members of the Society. The application must be filed and acted upon as provided for Local Sections in Section IX, and may be suspended or revoked for cause in the same manner.

Student Branches shall have power to make their own rules and by-laws, except that they shall not pass any rule or by-law in conflict with the Rules of the Society.

The officers of Student Branches shall be a Chairman, a Secretary, a Councilor, and such others as the Student Branch may prescribe. The Chairman and Secretary shall be elected by the Student Branch and their duties shall be such as usually pertain to those offices. The Councilor shall be an Active Member of the Society, appointed by the Board of Trustees to act in this capacity to the Student Branch. The duties of the Councilor shall be to advise the Student Branch in all matters pertaining to its relations to the Society and to make an annual report to the Society regarding the work and status of the Student Branch. The names of the Chairman, Secretary, and Councilor for each Student Branch shall appear in the roster of the Society.

Membership in a Student Branch shall be limited to the instructional force and regularly enrolled students of schools in which branches are located,

subject to the rules of the school concerned governing outside activities of students.

Student Branches shall have power to fix their own dues and assessments and, as such, shall pay no dues or initiation fees to the Society. No Student Branch shall have authority to incur debt in the name of the Society or for which the Society may become liable.

Members of a Student Branch as such shall pay no dues or initiation fees to the Society but upon depositing a certificate of good standing from their Secretary, may purchase from the Society its publications at the same rate as Associate Members of the Society. This privilege shall cease when the student's connection with the school ceases, but members of a Student Branch, upon leaving school, may at once become Associate Members of the Society by depositing their certificates, making proper application, and paying the regular initiation fee.

XI.

PUBLICATIONS.

The Board of Trustees may employ, at a suitable compensation, an editor of the publications of the Society.

The Committee on Publications shall have general supervision of the publications of the Society and of contracts and expenditures connected therewith, subject to the approval of the Board of Trustees.

In the consideration of papers offered for presentation or publication those papers containing matter readily found elsewhere, those specially advocating personal interests, those carelessly prepared or controverting established facts, and those purely speculative or foreign to the purposes of the Society, shall be rejected. The Committee on Publications shall determine which papers shall be printed. The Committee may return a paper to the writer for correction and emendation and may call to its aid one or more members of special experience relating to the subject treated, either to advise on the paper or to discuss it.

The Committee on Publications shall provide for the publication of a monthly periodical entitled the *Journal of the American Ceramic Society*, the subscription price of which shall be four dollars to members and six dollars to non-members.

One copy of the paper-bound edition of the Journal shall be sent prepaid to each member of the Society not in arrears. No member shall be furnished with more than one copy for any single year in return for his regular subscription. A member shall be permitted to complete by purchase one file of the publications of the Society at less than the current commercial rate, the amount to be fixed by the Board of Trustees and to be called the member's rate.

The Secretary shall have the custody of all publications of the Society, shall keep them safely stored and insured, and shall sell them to the public at prices which shall be fixed by the Board of Trustees. The Board of Trus-

tees shall also, from time to time, fix the price of the volumes remaining unsold and shall have authority to refuse to sell the back volumes of the Transactions and Journals except in complete sets, at such time as the quantity remaining of any number becomes so small as in their judgment to warrant such action.

The Editor shall request the author of each article appearing in the Journal of the Society to fill out and sign, within a definite time limit, a form, specifying the number of reprints of said article, if any, which he desires. This form shall contain a table from which can be computed the approximate cost at which any reprints will be furnished. In event that the expense of furnishing the desired number of reprints is large, the Board of Trustees may require the author to pay part or all of the cost involved before the publication of the reprints is begun. On receipt of such signed order within the time limit set the Editor shall cause to have printed the desired number of copies. If the author makes no reply or replies after the time limit has expired then the Society will not be responsible for the publication of any reprints of the article in question except at the usual market price for the printing of new matter.

No one shall have the right to demand the publication of an article independent of the discussion which accompanied it and no one having taken part in a discussion upon an article shall be entitled to order reprints of the discussion separately and apart from the article itself.

The Society is not, as a body, responsible for the statement of facts or opinions expressed by individuals in its publications.

XII.

PARLIAMENTARY STANDARD.

Roberts' "Rules of Order" shall be the parliamentary standard on all points not covered by these rules.

XIII.

AMENDMENTS.

To amend these Rules the amendment must be presented in writing at a regular meeting of the Society and, if approved by the Committee on Rules or by any ten Active Members, must be printed on a ballot and sent out not earlier than thirty nor later than sixty days after the adjournment of the meeting at which the amendment was presented. If the said letter ballot shows an affirmative vote of not less than two-thirds of the total vote cast within fourteen days of the date of mailing, then the same shall be declared carried and shall at once become effective.

PUBLICATIONS.

TRANSACTIONS, AMERICAN CERAMIC SOCIETY.

			Bound in cloth.
Vol. I.	1899,	110 pages	$4 75
Vol. II.	1900,	278 pages	4 75
Vol. III.	1901,	238 pages	4 75
Vol. IV	1902,	300 pages	4 75
Vol. V.	1903,	420 pages	5 75
Vol. VI.	1904,	278 pages	4 75
Vol. VII.	1905,	454 pages	4 75
Vol. VIII.	1906,	411 pages	4 75
Vol. IX.	1907,	808 pages	5 75
Vol. X.	1908,	582 pages	5 75
Vol. XI.	1909,	632 pages	6 25
Vol. XII.	1910,	882 pages	6 25
Vol. XIII.	1911,	837 pages	6 25
Vol. XIV.	1912,	888 pages	6 25
Vol. XV.	1913,	747 pages	6 25
Vol. XVI.	1914,	611 pages	6 25
Vol. XVII.	1915,	815 pages	6 25
Vol. XVIII.	1916,	947 pages	6 25
Vol. XIX.	1917,	707 pages	6 25
Complete set			$106 75

To members of the Society a reduction of 40 per cent will be made from the above prices. Members cannot purchase more than one copy of each volume at members' rate.

NOTE—Vols. II, V, IX, X, XII and XIX will not be sold except in complete sets.

The Society has also published the following books, which will be sold net, at the prices listed, to the public and members alike:

The Collected Writings of Dr. Hermann August Seger, Volume I, Contains (a) Treatises of General Scientific Nature. (b) Essays relating to Brick and Terra Cotta, Earthenware and Stoneware, and Refractory Wares. 552 pages. Bound in cloth..... $7 50

The Collected Writings of Dr. Hermann August Seger, Volume II. (a) Essays on White Ware and Porcelain. (b) Travels, Letters and Polemics. (c) Uncompleted works and extracts from the archives of the Royal Factory. 605 pages. Bound in cloth.... 7 50

A Bibliography of Clays and the Ceramic Arts, by Dr. John C. Branner, 1906. 451 pages. Bound in cloth. Contains 6027 titles of works on Ceramic subjects..... 2 00

A Directory of Dealers in Raw Ceramic Materials, 60 pages..... 50

The above publications can be obtained of the Secretary and will be shipped at the consignee's expense by express or parcels post to any address on receipt of the price. To all who purchase a complete set of the Transactions, a copy of the Branner Bibliography is given free. All checks or money orders are payable to The American Ceramic Society.

CHAS. F. BINNS, *Secretary.*
Alfred, N. Y.

ANNUAL REPORT OF THE BOARD OF TRUSTEES.

TO THE MEMBERS OF THE AMERICAN CERAMIC SOCIETY:

The Board of Trustees has prepared the following statement of the business and condition of the Society for the period February 1, 1917 to February 1, 1918:

RECEIPTS.

Brought forward February 1, 1917		$1,489.12
Dues	$3,642.88	
Fees	861.85	
Contributing Members	500.00	
Transactions	2,179.00	
Branner's Bibliography	13.20	
Seger's Collected Writings	75.00	
Reprints	115.63	
Convention Visitors	19.00	
Error in Deposit of Oct. 26, 1917	2.00	
Total Receipts for year ending January 31, 1918	$7,408.56	7,408.56
Total		$8,897.68

DISBURSEMENTS.

Publication of Vol. XIX:		
Stenographic report	$ 154.00	
Telegrams	4.02	
Drawings, Illustrations and Engravings	487.74	
Ptg., Binding, Casing and Typing	1,464.93	
Editor's salary	600.00	
	2,710.69	
Reprints of Vol. XVII and XVIII	246.75	
Transportation of volumes	186.73	
Balance due on Volume XVIII	105.59	
Convention expenses	239.80	
Seger's Collected Writings and Binding	75.15	
Binding early volumes	110.65	

Association Dues (Nat'l Fire Prot. Ass'n)	30.00	
Membership Committee	227.46	
Traveling expenses (arranging Summer meeting)	35.00	
Nat'l Exposition Chemical Industry	44.50	
Refund	3.75	
Insurance and storage on volumes	88.75	
Salary Ass't Secretary	300.00	
Extra clerk hire	577.25	
Postage, Stationery, Supplies, etc	762.99	
Telegrams	7.82	
Typewriter Rental	40.00	
Exchange charges	1.00	
Total Disbursements for year		$5,793.88
Balance Jan. 31, 1918		$3,013.80

REPORTS OF COMMITTEES AND STUDENT BRANCHES, 1918 MEETING.

REPORT OF THE COMMITTEE ON MILITARY AND ECONOMIC PREPAREDNESS.

This committee was created at the New York meeting and Prof. Edward Orton, Jr., was appointed chairman. Fortunately, he was able to remain with the work long enough to organize it before we lost him to the Army. The scope of the work comprised activities dealing, first, with direct war requirements, and second, those referring to economic matters affected by the war. The field was divided into sections according to the products most concerned with war needs. At the initial meeting the following sub-committees were organized:

Abrasives, R. C. Purdy, *Chairman.*
Chemical Porcelain, Charles F. Binns, *Chairman.*
Chemical Stoneware, R. H. Minton, *Chairman.*
Enameled Iron, R. D. Landrum, *Chairman.*
Electrical Porcelain, L. E. Barringer, *Chairman.*
Optical Glass, C. H. Kerr, *Chairman.*
Raw Materials, A. S. Watts, *Chairman.*
Refractories, A. V. Bleininger, *Chairman.*

The work of these committees for the year 1917–18 may be briefly summarized as follows:

Abrasives.—This committee, principally through its chairman, began its activity without delay by securing concerted action on the part of the manufacturers of grinding wheels. From among them a traffic committee was at once organized whose duty it was to move goods through embargoes so that each company could stock its yards with raw material. This was accomplished. Another committee was appointed to simplify the specifications for wheels which brought them to the question of machines and especially the size of arbors. It was necessary to specify the

arbor size in order that the Government could secure as many machines of one type as possible. There are also several other parts of machines that control the specifications of wheels and these have been considered by several committees. The Grinding Wheel Manufacturers' Association also has a War Service Committee, one member of which is in Washington all of the time. All of the work has been done by this organization but by men who are also members of the American Ceramic Society. The work has been completed and the final reports submitted.

Chemical Porcelain.—The principal needs of this work consisted in securing adequate specifications which would insure the production of good porcelain which would meet the requirements of the users. This has been done by the chairman who has devoted much time and attention to this subject. In a number of instances the specifications have been used to select ware for Government use.

Chemical Stoneware.—The work of this committee consisted to a large part in bringing about an organization of manufacturers for the purpose of securing a sufficient supply of clay, fuel and wood for forms, through the rigid embargoes. This involved a great deal of work on the part of Mr. Minton and his associates. They also looked after the prompt shipment of goods to the chemical plants which, in spite of the urgent need, was sometimes very difficult to accomplish, especially in the congested districts of the East. It was necessary to keep in touch with the War Industries Board, the various traffic committees, as well as the military authorities concerned. Some work has also been done towards the standardization of chemical stoneware.

Enameled Iron.—The work of this committee was of a somewhat diverse character. Assistance was rendered the Signal Corps to secure sheet metal parts through the use of the punch presses operated by manufacturers of enameled iron. The committee was able also to help the Government in securing the desired quantity and quality of enameled steel cooking utensils. Just now the Committee is working upon a standard specification for cooking utensils and hospital supplies for the Army and Navy.

This committee was instrumental also in having the manufacturers of sheet steel ware form a War Service Committee.

Electrical Porcelain.—This committee compiled a list of the porcelain articles needed by the Government but its attention was centered upon the spark plug problem, especially with reference to aeroplane engines. The several members of this committee, the laboratory of the General Electric Company and the Bureau of Standards worked along these lines, with reference to the spark plug itself, the cementing of the electrode and the assembling of the parts. Considerable work has been done along these lines and a general improvement has resulted from these efforts. The use of porcelains of a much higher maturing temperature, lower feldspar content and more constant thermal expansion has been brought about. Such problems are not restricted to the spark plug but apply to magnetos as well. In coöperation with the English a satisfactory insulation for magnetos has been worked out which is being manufactured in England today.

Optical Glass.—This committee was in touch with the developments in the production of this important material as well as with its most efficient use in optical instruments due to the connections of the chairman. The committee supplied technical information, abstracts, etc., to those interested and rendered such service as was within its province.

Raw Materials.—There has been a distinct lack of information concerning the sources of American raw materials used in the ceramic industries, a condition particularly trying during the stress of war time. Frequently, owing to embargoes or freight tie-ups, it has been found necessary to make changes in materials and for this purpose complete lists of miners and dealers were urgently needed. This need has been supplied by the committee, principally through the hard work of its chairman, by the publication of a Directory giving the names and addresses of 545 dealers in ceramic materials. This publication is still undergoing revision and will be reprinted from time to time.

Refractories.—This committee associated itself with the Refractories Manufacturers' Association and it was found desirable to organize a joint committee consisting of representatives of the principal government departments and manufacturers. This organization succeeded in interesting such men as Admiral Dyson, Commander Penn and other government officials in its work. Several meetings were held in Washington and the standard shapes adopted by the Refractories Manufacturers' Association were submitted for general acceptance by all the government departments. Work was begun on an extensive series of tests for the purpose of arriving at specifications covering the quality of refractories. This study was completed and the results issued by the Refractories Manufacturers' Association for distribution among its members. A great deal of work also had to be done with reference to clays for glass pots, graphite crucibles, special refractories such as magnesia spinel, and questions constantly brought up by different government departments. In coöperation with the Navy a study was made of light weight refractories for torpedo boats, destroyers and cruisers.

A. V. BLEININGER, *Chairman.*

February 11, 1918.

REPORT OF COMMITTEE ON SUMMER MEETING.

The members of this committee began early to canvass for the most favorable itinerary for a summer meeting. We took into consideration the fact that our people were interested most largely in the war and its issues as well as the character of the itinerary.

We met in Hornell, N. Y., Sunday afternoon and Monday morning of July 8 and 9, 1917. Those who met with Prof. Binns and Prof. Shaw on Sunday afternoon had a very delightful social time. On Monday, July 9th, 32 members and delegates went by motor bus from Hornell to Alfred. Here the day was spent most pleasantly with the faculty of the New York State School of Ceramics at Alfred University. The hearty welcome and cordial entertainment given by the Alfred faculty was most enjoyable. Much was learned by the visitors in the opportunity

to see in detail the most complete equipment and facilities for the teaching of Ceramics and for the making of ceramic researches. There probably is no laboratory more thoroughly equipped and more thoroughly organized than the laboratories of this school.

Late Monday afternoon the party motored back to Hornell and by train went to Corning where we spent a most delightful evening with Messrs. M. E. Gregory, F. R. Garder, Alfred Maltby and Dr. E. C. Sullivan.

Tuesday was devoted to visits to the plants of the Corning Brick, Terra Cotta & Tile Co., Corning Glass Works and the Stuben Glass Co. The members had the rare privilege of seeing in detail the manufacture of the now famous Pyrex Glass and had described and illustrated to them the manufacture of art glassware. The members had a rare opportunity in these visits to the Corning and Stuben Glass works and were very enthusiastic in their expression of appreciation.

Tuesday afternoon the Corning members entertained the visitors at a delightful dinner at the Corning City Club.

Wednesday morning the delegation which had now been increased in numbers took an early train from Corning to Watkins Glen, where they viewed one of the most picturesque wonders of Nature in America. Pictures and words would fail to convey an adequate description of the Glen. All who saw it made pledges to themselves for an early return visit.

After a delightful stay in and about the Glen and the Park the members took a noon train to Canandaigua where Clarence C. Keehan, Secretary and Assistant Manager of the Liske Mfg. Co., met the party, guided them to a restaurant where lunch had been arranged, and then through the large manufacturing plants.

The party arrived in Rochester, N. Y., late Wednesday afternoon. In the evening the party sought its own entertainment but it was mostly spent in exchange of greetings with the Rochester hosts and those who joined the party at this time. Thursday was spent in visiting the enameling plant of the Pfaudler Co., Taylor Instrument Co., and the Pennsylvania Feldspar Plant. The delegates were delightfully entertained at luncheon as guests

of these companies, and later at the beautiful park on Lake Ontario.

The party disbanded Friday evening after having enjoyed a week that was replete in things of Ceramic interest and opportunities, of seeing ceramic work which to most was not only novel but unknown, and seeing some of the most wonderful things that Nature has builded, with companionship that has already blossomed into lasting friendship on the part of many and, most, important of all, with a better understanding of the accomplishments and purposes of this Society, not only in general, but also as it relates to the individual members.

The official roster shows that nearly 60 members of the Society availed themselves of the opportunity of this meeting at one time or another and that there was at any time a minimum attendance of 32.

R. C. PURDY, *Chairman.*

February 12, 1918.

REPORT OF UNIVERSITY OF ILLINOIS STUDENT BRANCH.

The activities of the Student Branch have been somewhat curtailed during the past year owing to the generally prevailing conditions. A number of the members left school to enter military service before the end of the year. A further portion entered the Service during the summer, leaving only a small nucleus of members who returned to take up the work of the Society this year. The active membership has thus been reduced to fifteen.

The disorganization general in student bodies and the unsettled state of mind that most of the boys were in has further contributed to the difficulty of carrying out a well-planned program for the activities of the present year. Under these adverse conditions the members who have carried on the work this year have done exceedingly well. The following papers and lectures have been given at the several meetings:

"Plant Experiences," by J. W. Moncrieff and H. H. Sortwell.
"Firing Kilns with Forced Draft," by B. F. Carter.

"Electric Furnaces," by F. F. Footitt.

"Glass Notes," by J. E. Seabright.

"The Manufacture of Architectural Terra Cotta," An illustrated lecture, by Professor C. W. Parmelee.

"Research Notes," by Professors E. W. Washburn, C. W. Parmelee and R. K. Hursh.

"The Manufacture of Abrasives," an illustrated lecture, by Mr. Hermann A. Plusch, Abrasive Co., Phila., Pa.

One of the meetings during the year was made an "Open House" evening at the Ceramics building, when friends of the members and others who were interested were shown the laboratories and saw something of the work. This was especially planned for the benefit of the freshmen who had thus far had no opportunity to learn the character of the work ahead of them.

The Student Branch obtained and presented to the Department of Ceramic Engineering a large framed portrait of Professor Charles Wesley Rolfe who was so largely instrumental in obtaining the establishment of the Department at the University.

The present officers of the Branch at Illinois are: President; James W. Moncrieff; Vice-President, Griffith S. Kennelley; Secretary-Treasurer, Benjamin F. Carter.

R. K. HURSH, Councilor.

February 12, 1918.

REPORT OF THE IOWA STATE COLLEGE STUDENT BRANCH.

The number of students in ceramic engineering at Iowa State College has decreased very much on account of the War. Of the small enrollment we had last year, there are now eight men actually in the Army, three of these being in France. Several of the men enrolled had been drafted and expected to be called to the colors at an early date.

Nevertheless, the men remaining have held regular meetings every two weeks of the school year and have shown considerable enthusiasm in the work of the Student Branch. The arrangement and presentation of the programs has been entirely in the hands of the students, the faculty taking no hand in these. The

young men have shown originality and initiative in this work and a wide variety of subjects, most of them relating to practical questions in ceramic engineering, have been discussed.

Mr. E. Raddewig is Chairman and Mr. F. A. Ohlsan is Secretary of the Student Branch.

HOMER F. STALEY, Councilor.

February 12, 1918.

REPORT OF THE NEW YORK STATE STUDENT BRANCH.

The Society was greatly interested at the opening of the year in reports given by some of the members who had spent the Summer in practical work. Two successive meetings were arranged at which these reports were presented and discussed. It was felt to be very desirable that students would find opportunity during their college course to spend one or more summers in this way.

At the meeting of November 14, Prof. J. B. Shaw gave a talk on the production and use of enamels for steel and iron. The comprehensive and practical view given of this part of the ceramic field was new to many of the members and a great deal of interest was aroused.

About this time the Student Branch was somewhat disorganized and temporarily depressed by the loss of its chairman. This young man, a senior, had been carrying a heavy burden at home in the sickness and ultimate death of his father. Being thus compelled to postpone his graduation for a year he left college and went to work in the industry. After a short period of readjustment a new chairman was elected and the work was resumed. An interesting meeting resulted from a desire to hear what the lower classmen could do. A member of the Sophomore class was placed in charge and a program was successfully carried through.

Following upon this a session was devoted to hearing theses problems discussed by the senior class and finally an evening was assigned to a consideration of the preparation and use of the different types of cement.

Reviewing the year as a whole the result of the work has been satisfactory but not ideal. The dislocation alluded to, though

temporary, was serious because the school year is too short to admit of effective readjustments. Each year, however, provides a small supply of experience which will gradually accumulate into a fund.

CHAS. F. BINNS, Councilor.

February 12, 1918.

REPORT OF OHIO STATE UNIVERSITY STUDENT BRANCH.

The past year has been very satisfactory considering the fact that about fifteen of our students have enlisted, leaving only about thirty-five men in the course. We have, however, maintained our organization and held the following interesting meetings:

October 23, 1917. Meeting for organization and election of the following officers: E. D. Vance, *Chairman;* C. M. Dodd, *Vice-Chairman;* and J. W. Hepplewhite, *Secretary-Treasurer.* The object and purposes of the Society were explained by Professor Watts.

November 20, 1917. Address by R. T. Stull, U. S. Bureau of Mines, on "Paving Brick."

January 15, 1918. Address by Mr. H. G. Schurecht, U. S. Bureau of Mines, on "The Manufacture of Glass Pots."

The financial statement of the Branch shows $37.24 on hand, $48.00 collected, and $84.04 expended by order of the Branch, leaving a cash balance of $1.20.

ARTHUR S. WATTS, Councilor.

February 12, 1918.

IN RETROSPECT.

The first volume of the Journal of the American Ceramic Society is completed with this number.

Appointed in February 1918, the Committee on Publications was authorized to publish a monthly Journal to take the place of the annual volume of Transactions. The Committee took up the work promptly but several months were required to decide upon the many questions involved, such as the proper title and form of the magazine, actual size, subject matter to be included, advertising, publishing contracts, copyright, etc., etc. It

was decided to issue the entire twelve numbers for 1918 even though several months of the year had already elapsed and after the necessary preliminary arrangements the January number or Volume 1, No. 1, appeared in July, 1918.

With but six months in which to issue twelve numbers, considerable exertion was necessary upon the part of the Editor, the Publishers and all concerned and many seemingly unavoidable delays were encountered. The volume has been completed in time, however, to permit of Volume II starting sufficiently early in 1919 to ensure its appearance at approximately equal monthly intervals and completion by January 1920.

Bearing in mind the broad field of industrial operations covered by the ceramic industries and the need of the Journal's readers for a well-diversified list of professional papers, the Committee on Publications has endeavored to secure meritorious papers in all fields and the following tabulation will indicate the degree of success attained:

Subject.	No. of Papers.
Clays—Occurrence and Uses	5
Methods of Testing (raw materials and finished products, physical and chemical)	10
Drying and Driers	3
Kilns	5
Glass	9
Refractories (fire brick, saggers, glass pots, magnesia, etc.)	7
Enamels for cast iron and sheet steel	7
Pottery and porcelain	7
Terra Cotta	4
Cements, lime and plaster	5

Certainly a wide field is covered in this list and there is much of interest and value to all interested or engaged in ceramic work.

Perhaps some important fields were not sufficiently represented but this is due entirely to not having contributions from capable men in such branches. For Volume II the Committee on Publications is in a position to promise even a greater degree of diversification, while still maintaining and even advancing the degree of technical excellence.

The Committee on Publications desires to thank all who have contributed to the success of Volume I, the authors of the various papers published, the pioneer advertisers who accepted the value of the advertising medium upon faith, and the members of the American Ceramic Society who have offered helpful suggestions and coöperation.

We are encouraged by Volume I; we hope it has proven both pleasing and profitable to its readers and we will endeavor to serve you as well or better in Volume II.

COMMITTEE ON PUBLICATIONS.

TECHNICAL PAPERS—VOLUME I.

JOURNAL OF THE AMERICAN CERAMIC SOCIETY.

No. 1.

1. Kaolin in Quebec 8
By J. Keele.

2. Special Pots for the Melting of Optical Glass 15
By A. V. Bleininger.

3. The Effect of Gravitation upon the Drying of Ceramic Ware 25
By E. W. Washburn.

4. Test of a Producer Gas-Fired Periodic Kiln 35
By C. B. Harrop.

5. Notes on the Hydration of Anhydrite and Dead-Burned Gypsum .. 65
By A. C. Gill.

No. 2.

6. On the Relation between the Physical Properties and Chemical Composition of Glass: VIII. Molecular Compounds 76
By E. W. Tillotson, Jr.

7. Fire Clays in Northern Idaho 94
By E. K. Soper.

8. Ground Coat Enamels for Cast Iron 99
By Homer F. Staley.

9. The Bonding Strengths of a Number of Clays between Normal Temperature and Red Heat 113
By C. W. Saxe and O. S. Buckner.

10. Observations on the Formation of Seed in Optical Glass Melts 134
By A. E. Williams.

No. 3.

11. Some Phenomena in Glaze Reduction 148
By H. B. Henderson.

12. Natural Hydraulic Cements in New York 160
By Robert W. Jones.

13. Tests of Clays and Limes by the Bureau of Standards Plasticimeter 170
By F. A. Kirkpatrick and W. B. Orange.

14. The Use of Furnace Slag as Grog in Architectural Terra Cotta Bodies 185
By R. H. Minton.

15. The Effect of Electrolytes on Some Properties of Clays 201
By H. G. Schurecht.

No. 4.

16. The Effect of the Degree of Smelting on the Properties of a Frit 221
By E. P. Poste and B. A. Rice.

17. Cobalt-Uranium Green Glaze for Terra Cotta 238
By Hewitt Wilson.

18. Alabaster Glass: History and Composition 247
By Alexander Silverman.

19. The Zwermann Tunnel Kiln and Its Operation 262
By Carl H. Zwermann.

20. The Properties of Some Ohio and Pennsylvania Stoneware Clays 267
By H. G. Schurecht.

21. The Use of Dense Solutions in Determining the Structure of Porcelain 287
By H. Spurrier.

No. 5.

22. A Study of Draft Movements in Flues 294
By E. H. Fritz.

23. The Clays of Florida 313
By E. H. Sellards.

24. An Attempted Heat Balance on a Continuous Kiln of the Chamber Type 322
By Chester Treischel and H. S. Robertson.

25. Notes on the Laboratory Testing of Silica Brick 338
By R. J. Montgomery and L. R. Office.

26. Polychrome Decoration of Terra Cotta with Soluble Metallic Salts 353
By Hewitt Wilson.

No. 6.

27. The Porosity and Volume Changes of Clay Fire Brick at Furnace Temperatures 384
By G. A. Loomis.

28. The Calculation of the "Rational Analysis" of Clays..... 405
By Henry S. Washington.

29. The Action of Acetic Acid Solutions of Different Strengths on a Sheet Steel Enamel..... 422
By L. J. Frost.

30. Note on Colors Produced by the Use of Soluble Metallic Salts.... 429
By Paul G. Larkin.

31. Note on the Sintering of Magnesia..... 439
By J. B. Ferguson.

No. 7.

32. The Occurrence of High-Grade American Clays and the Possibilities of their Further Development..... 446
By H. Ries.

33. The Effect of Certain Impurities in Causing Milkiness in Optical Glass..... 468
By C. N. Fenner and J. B. Ferguson.

34. Silica Refractories..... 477
By Donald W. Ross.

35. Antimony Oxide as an Opacifier in Cast Iron Enamels..... 502
By J. B. Shaw.

No. 8.

36. Newcomb Pottery..... 518
By Mary G. Sheerer and Paul E. Cox.

37. A Conveyor Stove Room..... 529
By C. E. Jackson.

38. Preparation and Application of Enamels for Cast Iron..... 534
By Homer F. Staley.

39. A Pycnometer Operated as a Volumeter..... 556
By H. G. Schurecht.

40. Communicated Discussion by F. Gelstharp on the paper "The Effect of Certain Impurities in Causing Milkiness in Optical Glass," by Fenner and Ferguson..... 559

41. Heat Balance on a Producer-Gas Fired Chamber Kiln..... 567
By R. K. Hursh.

42. Some Factors Influencing the Time of Set of Calcined Gypsum.... 578
By F. F. Householder.

43. The Nature of the Air Content of Pugged Clays..... 584
By H. Spurrier.

No. 9.

44. The Identification of "Stones" in Glass..... 594
By N. L. Bowen.

45. Some Types of Porcelain..... 606
By F. H. Riddle and W. W. McDanel.

46. The Use of Car Tunnel Kilns for Brick and Other Products of Crude Clays..... 628
By Ellis Lovejoy.

47. The Presence of Iron in the Furnace Atmosphere as a Source of Color in the Manufacture of Optical Glass..... 637
By E. W. Washburn.

48. The Control of the Luster of Enamels..... 640
By Homer F. Staley.

49. Observations on Apparent Causes of Failure of Lead Glass Pots.. 648
By A. F. Gorton.

50. An Unusual Cause of Spalling of Sewer Pipe..... 660
By C. W. Parmelee.

No. 10.

51. A Discussion of Terra-Cotta Dryers..... 667
By Ellis Lovejoy.

52. The Composition of Chinese Celadon Pottery..... 675
By J. S. Laird.

53. The Hydraulic Properties of the Calcium Aluminates..... 679
By P. H. Bates.

54. Note on Certain Characteristics of Porcelain..... 697
By A. V. Bleininger.

55. Enamels for Cast Iron..... 703
By Homer F. Staley.

56. A Method for the Determination of Air in Plastic Clay..... 710
By H. Spurrier.

57. Notes on Sagger Clays and Mixtures..... 716
By G. H. Brown.

58. Magnesia Ware..... 730
By Trygve D. Yensen.

No. 11.

59. A Contribution to the Methods of Glass Analysis, with Special Reference to Boric Acid and the Two Oxides of Arsenic..... 739
By E. T. Allen and E. G. Zies.

60. The Condition of Arsenic in Glass and Its Rôle in Glass-Making.. 787
By E. T. Allen and E. G. Zies.

61. The Partial Purification of Zirconium Oxide..... 791
By A. J. Phillips.

62. Strength Tests of Plain and Protective Sheet Glass..... 801
By T. L. Sorey.

INDEX TO VOLUME I.

JOURNAL OF THE AMERICAN CERAMIC SOCIETY.

A

Absorption of terra cotta bodies..... 187
Acetic acid, Effect of, on sheet steel enamels. Frost..... 422
Acid test on enamel frits..... 223
Ageing, Effect of electrolytes in..... 214
——Effect of, on viscosity of porcelain bodies..... 179
——Effect of, on porcelain bodies..... 616
Agricultural products, statistics, comparative..... 376
Air, in pugged clays. Spurrier..... 584
——in plastic clay, Determination of. Spurrier..... 710
Alabaster glass, History and composition of. Silverman..... 247
——from Hillsboro, N. B..... 65
Alabama kaolins, Occurrence of..... 452
Albery, D. F., Discussion of green terra cotta glazes..... 243
Albite-anorthite glasses, Refractive indices and densities of..... 79
Alcohol, used with underglaze colors..... 354
——Wood, Effect of impurities in, on B_2O_3 determination..... 766
Alkalies, Effect of, in producing milkiness in glass..... 560
Allen, E. T. and Zies, E. G. "Methods of Glass Analysis with Special Reference to Boric Acid and the Two Oxides of Arsenic"..... 739
——"Condition of Arsenic in Glass and Its Rôle in Glass Making"..... 787
Alum, Use of, as an accelerator in gypsum 71
Alumina, Effect of, in alabaster glass..... 252
——Effect of, in silica brick..... 342
——Effect of, in optical glass..... 137
——Separation of, from barium and calcium in glass..... 779
——Function of, in portland cement..... 681
Aluminates, calcium, Hydraulic properties of. Bates..... 679

AMERICAN CERAMIC SOCIETY:
Annual meeting, 1918..... 662
Honorary Secretaryship..... 664
New Members during Sept., 1918..... 441
New Members during Oct., 1918..... 514
New Members during Nov., 1918..... 588
New Members during Dec., 1918..... 734
Professional Divisions..... 586
Professional Divisions, Organization leaders of..... 663
Reprints from Journal..... 586
American clays, High-grade. Ries..... 446
——optical glasses, Analyses of..... 784

ANALYSES:
——Ashes, from gas producer..... 330
——Bonding clays used by Saxe and Buckner..... 115

ANALYSES (*continued*):
——CO_2 in optical glass bubbles..... 135
——Coal charged to gas-producer..... 330
——Chinese Celadon glazes..... 676
——Chinese Celadon bodies..... 677
——Connecticut feldspar..... 504
——Discussion of value for fire brick..... 386
——Enamel frits. Poste and Rice..... 225
——Experimental batches for cement. Bates..... 684
——Fused magnesia..... 732
——Flue-gases of producer-gas fired kiln 54
——Gases from pugged clay. Spurrier..... 585
——Limits for silica brick..... 497
——Methods of analyses of boric acid and the two oxides of arsenic. Allen and Zies..... 739
——Optical glasses, American..... 784
——Phonalite..... 268
——Potashes for glass batches..... 249
——Producer-gas samples..... 47
——Quebec kaolin..... 10
——Rational analysis of clays, Washington 405
——Russian potash..... 469
——Searchlight glass..... 475
——Slag from Coatesville, Pa..... 186
——Slag from Illinois Steel Co..... 189
——SO_3 and Cl in optical glass..... 473
——Typical, of silica brick..... 347
——Uranium oxide..... 239
——Ultimate, value of, for clays. Washington..... 409
Anhydrite, and dead-burned gypsum. Gill 65
Anorthite-albite glasses, refractive indices and densities of..... 79
Antimony oxide in cast iron enamels. Shaw..... 502
——Separation of, from arsenic in analysis of glass..... 743
——enamels for cast iron..... 706

APPARATUS:
——Conveyor stove room for potteries. Jackson..... 529
——Expansion of silica brick. Ross..... 495
——Heat balance on continuous kiln..... 323
——Heat balance, description of..... 42
——Measuring draft movements in flues... 296
——Measuring air content of clays..... 584
——Quantitative determination of air in clay. Spurrier..... 712
——Tensile strength machine for hot briquettes..... 117
Application of ground coats to cast iron.... 543
——of cover coats to cast iron..... 552
Arsenic, Effect of, in causing milkiness.... 560
——in glass, Methods of analysis of. Allen and Zies..... 739
Arkansas bond clays, Occurrence of..... 459
Art pottery, History of Newcomb..... 518
Atlantic Coastal Plain Belt, Clays in..... 448
Aventurine glazes, discussion of..... 157

B

Ball clays, Tenn. and Ky., Viscosity of slips 178
——Occurrence of, in America. Ries..... 446
——Effect of, in porcelain bodies..... 619
Ball test, for testing fire brick..... 390
Barium, and lead, Determination of, in glass 777
——disilicate in optical glass..... 602
——Effect of addition of, to porcelain bodies..... 622
——in optical glass..... 136
Barringer, L. E. Discussion of effect of gravity in drying..... 32
——Discussion of air in clay..... 714
——Discussion of car tunnel kilns..... 634
Basalt, Formation of clays from..... 94
Batch weight, of sillimanite calcine..... 624
——of cone 11 porcelain body..... 625
——enamels for cast iron..... 505
Batch stones in glass..... 597
Bath tubs, Enameling of..... 543
Batting out machine used with jigger..... 532
Bates, P. H. "Hydraulic Properties of the Calcium Aluminates"..... 679
Bausch & Lomb Optical Co., Manufacture of optical glass at..... 468
Beecher, M. F. Discussion of bonding strength of clays at red heat..... 132
Bending tests on sheet and plate glass.... 807
Bertrand and Agulhon. Method of testing for B_2O_3..... 764
Bibliography on alabaster glass, books..... 256
——on alabaster glass, journals..... 258
——on Fla. clays..... 321
Binns, C. F. Discussion of glaze reduction 156
——Discussion of air in clay..... 714
Biotite in Idaho granite..... 96
Bisque, Whiteware, as grog in glass pots... 17
Bleininger, A. V. "Certain Characteristics of Porcelain"..... 697
——"Special Pots for the Melting of Optical Glass"..... 15
Blending, of ground coats for enamels..... 104
Blower used with gas-producer..... 37
Blue colors, soluble, for terra cotta. Larkin 434
Body mixtures, Newcomb Pottery..... 522
——Porcelain, some types of. Riddle and McDanel..... 606
——Porcelain, Formulas of..... 607
——of Chinese pottery..... 678
——terra cotta, Use of slag as grog in. Minton..... 185
Boiling during fritting of enamels..... 509
Bonding, clays, used by Saxe and Buckner.. 115
——clays for saggers..... 719
——clays in glass pot mixtures..... 16
——strength of clays dried at different temperatures..... 119
——strengths of clays between normal temperature and red heat..... 113
Boric acid, in glass, Methods of analysis of. Allen and Zies..... 761
——Addition of, to sillimanite calcine..... 623
——oxide, Effect of, on viscosity of enamels 641
Boro-silicate crown optical glass, Milkiness in..... 559
Bowen, N. L. "Identification of Stones in Glass"..... 594
Bricks, Burning of, in car tunnel kilns..... 628
——Silica. Ross..... 477
——building, Burning, in continuous kiln.. 323
——building, Production of, in Fla..... 313
Brown colors, soluble, blends for terra cotta. Larkin..... 435
Brown, G. H. "Sagger Clays and Mixtures"..... 716
Bubbles, in glass..... 594
——in optical glass melts..... 134
Buckner, O. S. and Saxe, C. W., "Bonding Strengths of Clays"..... 113
Bureau of Standards. "Tests on Fla. Clays"..... 313
——report on terra cotta tests..... 195
Burning, art pottery at Newcomb pottery... 527
——heavy clay products in car tunnel kilns..... 628
——flashed brick..... 152
——natural hydraulic cements..... 168
——of silica brick..... 346
——properties of clays, Effect of electrolytes on..... 211
——preliminary burning of glass pots...23, 654
——porcelain bodies for glass pots..... 610
——silica brick, effect of reheating..... 480
——strength of clays. Saxe and Buckner.. 113
——temperatures of cements..... 684
Burners, cast iron, used with producer-gas 40
——clay, for glass melting furnaces..... 639
——Oxidation of, in glass melting furnaces. 638
Burt, S. G. Discussion of terra cotta glazes 365
By-product coke oven, Silica brick from.... 489

C

Calcium aluminates..... 679
——carbonate as flux in chemical stoneware..... 267
——magnesium-silicate glasses, Refractive indices and densities of..... 79
——Separation of, from alumina and barium in glass analysis..... 779
Calcined alumina-clay, Addition of, to porcelain bodies..... 623
——gypsum, Time of set of..... 578
——kaolin in glass pot mixtures..... 16
CALCULATIONS:
——Heat balance on producer-gas fired periodic kiln..... 45
——Heat balance of continuous kiln..... 330
——Heat balance on chamber kiln..... 569
——Rational analysis of clays. Washington..... 405
——used with pycnometer-volumeter..... 558
Canadian China Clay Co. Clay Properties of..... 8
Carborundum, as coating for chemical stoneware..... 268
Carbon in salt glazes..... 149
Car tunnel kilns, Use of, in burning heavy clay products..... 628
Carbon-dioxide in glass, Determination of.. 781
Casting glass pots..... 19
Cast iron enamels, Preparation and application of. Staley..... 534
——enamels, Use of antimony oxide in. Shaw..... 502
——Ground coat enamels for. Staley..... 99
——enamels. Staley..... 703
Celluloid coatings on plate and sheet glass.. 801
Celadon pottery. Laird..... 675
Cement, portland, Compounds in..... 679
——Natural hydraulic in N. Y. Jones... 160
Centrifugal force, Effect of, upon drying.. 33
Ceramic products, statistics, comparative.. 372
——industries, classified list..... 380
Chamber kiln, Heat balance on..... 567
Chapin's method for determination of boric acid in glass..... 762

Chemical compounds in glass..... 76
——glassware, Effect of boric acid in..... 763
——stoneware, Properties of..... 267
——analyses (See Analyses).
Chilling of optical glass melts..... 135
China clay washing plant, St. Remi, Quebec..... 10
——bodies, commercial, Properties of..... 617
Chinese pottery. Laird..... 675
Chlorides in optical glass..... 473
——zirconium, Formation of..... 794
Chlorine, Effect of presence of, in glass analysis..... 755
——Use of, in purification of zirconia.... 794
Clays, Air content in pugged..... 584
——American, in porcelain bodies..... 608
——Biloxi, Miss., used for saggers..... 527
——content, Effect of, in porcelain bodies.. 611
——Effect of electrolytes on properties of.. 201
——Function of, in cast iron enamels..... 101
——for saggers. Brown..... 716
——Geodes in..... 660
——in sheet steel enamels..... 422
——in Northern Idaho..... 94
——of Florida..... 313
——Occurrence of high-grade, in America. Ries..... 446
——plastic, Determination of, air in..... 710
——Sandy, in terra cotta bodies..... 197
——Strengths of, at red heat. Saxe and Buckner..... 113
——stoneware, Properties of Ohio and Penna. Schurecht..... 267
——Tests of, with plasticimeter..... 170
Clare, R. L. Discussion of green terra cotta glazes..... 243
——Theory of, on failure of terra cotta.... 185
Clinker, cement, Crystallization of..... 682
Coal Measures, Clays in..... 464
Coatings for sheet and plate glass. Sorey.. 801
Cobalt stain, Use of, in porcelain bodies.... 627
——uranium green glaze for terra cotta. Wilson..... 238
——oxide in cast iron enamels..... 101
Coke, petroleum, Use of, in chlorination... 784
Combustion in car tunnel kilns..... 629
Columbia basalt in Idaho..... 94
Color, of enamels, Effect of antimony oxide on..... 503
——of salt glazes..... 148
——of optical glass from iron in gases.... 637
——of porcelain, Effect of firing on..... 626
——soluble, for terra cotta. Larkin..... 429
——underglaze, Formulas of..... 354
COMMITTEES:
——Chemistry of cements and related building materials. National Research Council..... 5
——Chemistry of glass. National Research Council..... 5
——Chemistry of ceramics. National Research Council..... 5
——Standards, A. C. S. Tests of clays.... 132
Concrete, Compressive strengths of special. 692
Continuous kiln, Heat balance of..... 322
——fired with producer-gas..... 35
Conveyors, Stove room. Jackson..... 529
Connecticut kaolins..... 461
Constants, Table of, for pressure-temperature conversion of gases..... 304
Conductivity, electrical porcelains..... 699
——of silica brick..... 343
Cooling optical glass..... 134
——of terra cotta after firing..... 185
——cast iron enameled ware..... 554
Cooling of saggers, Effect of rate of..... 717
Corundum, used in chemical stoneware..... 268
Cornwall, England, china clay..... 13
Corrosion of glass pots..... 15–596
——of glass pots, Discussion of..... 651
Cost of soluble colors for terra cotta..... 437
Creighton, E. E. F. Discussion of specific gravity test for porcelains..... 290
Cox, Paul E. "Technical Practice at Newcomb Pottery"..... 521
Cristobalite crystals in optical glass..... 475
——Properties of..... 477
——Optical properties of..... 604
Cross-breaking tests on clays..... 202
Crown drops in glass..... 598
Crown and boro-silicate optical glasses..... 134
Crucibles, Clays for graphite..... 447
——Magnesia..... 730
Crushing strength of silica brick..... 341
——test for fire brick..... 390
Crystallization of gypsum..... 66
——of glasses and enamels..... 640
——of fused magnesia..... 733
——of pot stones..... 596
Cryolite, Use of, in cast iron enamels..... 504
Crystalline forms of silica..... 345

D

Danielson, R. R. Discussion of acetic acid tests for enamels..... 427
——Discussion of enamel frits..... 234
Day, Arthur L. Committee on Glass..... 5
Davenport, R. W. Discussion of draft movements in flues..... 308
Dead-burned gypsum, Hydration of. Gill. 65
Deflocculation of clays, Discussion of..... 214
Decolorizers, Use of, in optical glass..... 637
Deformation of glass pots, Causes of..... 656
——tests on enamel frits..... 222
——Discussion of, of fire brick..... 389
Dehydration of gypsum..... 69
——curves, Data for..... 118
——of clay..... 574
Density of clays, Effect of electrolytes on.. 208
——of lime pastes, Effect of water on..... 117
Design of car tunnel kilns..... 629
Devitrification of optical glass..... 475
——stones in glass..... 599
Dicalcium-silicate, Discussion of..... 679
Di-electric strength of porcelains, Effect of heating on..... 699
Differential gages on kilns..... 310
Dolomite, Effect of addition of, to porcelain bodies..... 623
Draft movements in flues. Fritz..... 294
Dredges for applying enamels on cast iron.. 553
Dryers for terra cotta. Lovejoy..... 667
——for enamel frits..... 540
Drying, Effect of, on bonding strengths..... 113
——glass pots..... 20
——Effect of gravitation upon the drying of ceramic ware. Washburn..... 25
——of pottery in conveyor stove-room..... 532
Dunting of terra cotta..... 185
Dusting of portland cement clinker..... 687

E

EDITORIALS:
——Acid Resisting Enamelware..... 74
——American Ceramic Society Exhibit at the Exposition..... 219
——American Ceramic Society and the War..... 292

EDITORIALS (*continued*):
——Annual Meeting 515
——Chemical Stoneware 291
——Clay Products at the Chemical Exposition 367
——Cooperation 145
——Directory of Dealers 517
——Fuel Curtailment Orders 2
——Growth of the Society 737
——Glassware Exhibits at the Exposition 369
——High-temperature Furnaces 146
——Imported Clays 665
——Industrial Furnace Section 146
——Kilns 738
——Looking Forward 443
——Membership Campaign 147
——National Research Council 4
——Patent Situation 591
——Pottery Industry 666
——Professional Divisions 444
——Technical Ceramic Training 217
——To the Public 1
——To Members 516
——Unity in the Ceramic Industry 73
——War Curriculum in Ceramic Engineering 293
Edgar plastic clays, Occurrence of 318
Efficiency of continuous kilns 333
——of producer gas-fired chamber kiln 576
Electrolytes, Effect of, on clays 201
Electric furnace, Sintering magnesia in 440
Electrometric method for determination of boric acid in glass 762
Electrolytic determination of zinc in optical glass 775
Electrical porcelain, Firing of, in tunnel kiln 634
Embayment area, Clays in 453
Emley, W. E. Discussion of hydration of anhydrite and gypsum 70
——Discussion of Plasticimeter 183
Enamels, Ground coat, for cast iron 99
——cast iron, Preparation and application of, Staley 534
——Testing sheet steel, with acetic acid, Frost 422
——Luster of, Staley 640
——for cast iron, Staley 703
——Use of antimony oxide in, Shaw 502
English clays, Importation of 447
Engobe, Clay content of, for terra cotta 429
Erie Canal, Use of natural cements in 162
Erosion of glass pots 653
European porcelains, Types of 606
——porcelains, Firing of 626
Expansion of silica brick 341
——of silica brick under load 494

F

Failure of glass pots 648
——of terra cotta bodies 185
Fenner, C. N. and Ferguson, J. B. "Discussion of Milkiness in Optical Glass" 559
——and Ferguson, J. B. "Effect of Certain Impurities in Causing Milkiness in Optical Glass" 468
Feldspar, in glass pot mixtures 16
——in Idaho granite 96
——as flux in chemical stoneware 267
——content, Effect of, on porcelain bodies 611
——in clays, Rational analysis of 407
——porcelain, Electrical conductivity of 700
——Use of, in glass pot mixtures 657
Ferguson, J. B. "Note on the Sintering of Magnesia" 439
——and C. N. Fenner. Milkiness in optical glass 468, 559
Ferrous iron, Presence of, in arsenic analysis 752
——in Chinese glazes 677
Ferric oxide in glass furnace atmosphere 638
Fining of optical glass 134
——glass, Rôle of arsenic in 788
Fire clays in northern Idaho. Soper 94
Fire-cracking of terra cotta 185
Fire brick, manufacture in Idaho 98
——Porosity and volume changes of, at furnace temperatures 384
——Effect of iron content in, on glass color 638
——for glass melting furnaces 639
Filter press leaves, Air in 713
Firing, Schedule used in testing fire brick 393
——tests, with rifle on sheet and plate glass 801
Flashed brick, Color of 152
Flint content, Effect of, on porcelain bodies 612
Flint clays of Missouri, Occurrence of 465
Floating enamels, Use of magnesium sulphate for 99
Floor dryer for terra cotta 673
Flotation of cast iron enamels 102
Florida, Clays of 313
——kaolin, Occurrence of 450
Flues, for enameling furnaces 545
Fluxing oxides, Effect of, on luster of enamels 643

FORMULAS:
——Alabaster glasses. Silverman 247
——Antimony oxide enamels. Staley 709
——Blue stain for terra cotta 239
——Bright glaze for terra cotta 241
——Cast iron enamels. Shaw 505
——Enamel frits 224
——for sheet steel. Frost 422
——Ground coats for cast iron enamels 106
——Matt glaze for terra cotta. Wilson 239
——Matt glaze, Newcomb Pottery 521
——Normal glass 77
——Purdy's porosity 118
——resistance, Electrical, of porcelain 700
——Refractive index of glass 91
——Shrinkage in terms of true clay volume 203
——Terra cotta bright glaze. Larkin 432
——Terra cotta matt glaze. Larkin 432
——Terra cotta bodies 186
——Tin glaze, Newcomb Pottery 521
——Tin enamels. Staley 706
——Velocity of gases in flues 304
——Vapor pressure in drying 28
Forsterite, in sintered magnesia 439
Frink, R. L. Discussion of seeds in optical glass 136
Frit, used in ground coat enamels 99
——Smelting of enamel 221
——Enamel, for cast iron 536
Fritz, E. H. "A Study of Draft Movements in Flues" 294
Freezing tests on terra cotta 187
French flint, in porcelain 698
Frost, Leon J. "Action of Acetic Acid Solutions of Different Strengths on a Sheet Steel Enamel" 422, 427
Fulton, C. E. Discussion of pots for optical glass 23
——Discussion of bonding strength 331
Fuller's earth in Florida 513
Fuel used in enameling furnaces 148

Furnaces, Frit, for cast iron enamels 536
——for purification of zirconia 796
——Melting, for cast iron enamels 545
——atmosphere, Iron in glass 637
Fusibility of cast iron enamels 105
Fused magnesia, Preparation of 730
Fusion point (see Softening Point).

G

Gages, Draft. Fritz 294
Ganister rock for silica brick manufacture .. 338
Gates, W. D. Discussion of seeds in optical glass 136
Gas-producer, Description of 35
——used on chamber kilns 561
Gases, in bubbles in glass 135
——waste, Heat losses in 332
——Nature of, in clays 584
——in glass, Determination of 781
Gelstharp, F. Discussion of seeds in optical glass 138
——Discussion of the "Effect of impurities in causing milkiness in optical glass" 559
——Arsenic in glass 787
GEOLOGY:
——of northern Idaho fire clays 94
——Hydraulic limestones in N. Y. 165
——Occurrence of Penna. and Ohio stoneware clays 269
——Occurrence of Fla. clays 313
——Occurrence of quartzites 480
——Occurrence of high-grade American clays 446
Geodes, in sewer pipe clays 660
Georgia kaolin, Occurrence of 450
German potash in optical glass 469
Gill, A. C. "Hydration of Anhydrite and Dead-burned Gypsum" 65
Glaciation, in Canada, Discussion of 13
Glass pots, Special, for the melting of optical glass. Bleininger 15
——Seeds in optical. Williams 134
——alabaster, History and composition of. Silverman 247
——Identification of stones in. Bowen 594
——optical, Milkiness in. Gelstharp 559
——Effect of certain impurities in causing milkiness in optical. Fenner and Ferguson 468
——pots, Clays for 447
——Methods of analyses of boric acid and the two oxides of arsenic 739
——optical, Rôle of arsenic in. Allen and Zies 787
——pots, Causes of failure of. Gorton 648
——Optical, color affected by iron in gases, Washburn 637
——Tests of sheet and plate. Sorey 801
Glaze reduction, Some phenomena in. Henderson 148
——for chemical stoneware 267
——formulas for terra cotta 356
——Polychrome, for terra cotta 353
——Cobalt-uranium green glaze for terra cotta. Wilson 238
——for terra cotta, using soluble salts, Larkin 429
——Chinese. Laird 675
Glazing, Newcomb Pottery 524
Glycerine, used with underglaze colors 354
Gooch and Browning method for determination of arsenic 745
Gorton, A. A. "Observations of Apparent Causes of Failure of Lead Glass Pots" 648
Granite in Northern Idaho 94
Gravitation, effect upon drying of ceramic ware. Washburn 25
Greenwood, W. W. Discussion of electrolytes in clay 214
Green color for terra cotta glazes. Wilson. 238
——soluble, Blends for, on zinc glazes, Larkin 433
——of optical glass 637
Grey color, Soluble, blends for terra cotta, Larkin 435
Grog, in terra cotta bodies. Minton 185
——in chemical stoneware 267
——in glass pot mixtures 17
——Effect of, on strength of saggers 722
Grinding machine for enamel frits 540
Ground coats, Application of, on cast iron .. 543
——enamels for cast iron. Staley 99
Gypsum, Hydration of anhydrite and dead-burned 65
——Effect of addition to hydrated lime 175
——Calcined, Time of set of. Householder 578

H

Harrop, C. B. "Test of a Producer-gas Fired Periodic Kiln" 35
——Discussion of draft movements in flues. 308
——Discussion of heat balance on continuous kiln 334
Hard porcelain, Some types of 606
——fire porcelain, Special 697
Heat distribution in producer-gas fired periodic kiln 60
——balance of chamber continuous kiln, Treischel and Robertson 322
——of dissociation of clay 574
Henderson, H. B. "Some Phenomena in Glaze Reduction" 148
Hice, R. R. Discussion of Quebec kaolin .. 13
Hill, E. C., quoted on failure of terra cotta .. 185
——Discussion of failure of terra cotta bodies 194
Hillebrand, W. F. Analysis of gas in bubbles in glass 135
History and composition of alabaster glass, Silverman 247
——of natural hydraulic cements in N. Y. Jones 160
Holes in glass pots, Causes of 656
Householder, F. F. "Some Factors Influencing the Time of Set of Calcined Gypsum" 578
Howe, R. M. Discussion of tests for silica brick 345, 499
Hornblende in Idaho granite 96
Hubbard, Prevost, Committee on Cements .. 5
Humidity, Relative, in dryer 32
——of atmosphere during heat balance 50
——in terra cotta dryers 666
Hursh, R. K. "Heat Balance on a Producer-gas Fired Chamber Kiln" 567
Hydration of anhydrite and dead-burned gypsum. Gill 65
Hydrated lime pastes, Tests of 173
Hydraulic cements in New York. Jones ... 160
——mining, of Fla. clays 319
——properties of the calcium aluminates, Bates 679

I

Idaho, Fire clays in northern. Soper..... 94
Illinois bond clays, Occurrence of..... 460
Impact tests on sheet and plate glass..... 804
Imported clays, Value of..... 447
Impurities in fused magnesia..... 732
Index of refraction, Relation of, to brilliancy of enamels..... 645
Industrial Furnace Section, U. S. Fuel Administration..... 3
Inspection, visual, of silica brick..... 339
Iron, Effect of, in silica brick..... 343
——coloring power in glass..... 15
——Effect of, on color of salt glazes..... 155
——Removal of, from zirconium oxide..... 791
——in glass, Effect of, on pots..... 652
——Removal of, from glass batches..... 652
——in glass furnace atmosphere. Washburn..... 637
——in optical glass, Determination of..... 771

J

Jackson, C. E. "A Conveyor Stove Room"..... 529
Jena optical glass, Determination of arsenic in..... 744
——glasses, Analyses of..... 784
Jiggering, pottery..... 529
Jones, Robert W. "Natural Hydraulic Cements in New York"..... 160

K

Kaolin in Quebec..... 8
——Formation of..... 13
——in Idaho clay deposits..... 96
——Occurrence of, in Florida..... 313
——American, in porcelain bodies..... 608
——Occurrence of, in America. Ries..... 446
——Constitution of, and rational analyses.. 405
——Use of, in Chinese pottery..... 678
——Use of, in coating glass furnace walls.. 639
——Effect of, on viscosity of enamels... 642
Keele, J. "Kaolin in Quebec"..... 8
Kerr, C. H. Discussion of pots for optical glass..... 21
——Discussion of molecular compounds in glass..... 88
Kentucky bond clays, Occurrence of..... 456
Keuffel, C. W. Discussion of seeds in optical glass..... 140
Kiln, periodic, Description of, used in heat balance..... 39
——for burning natural cement..... 164
——Zwermann tunnel, Description of..... 262
——continuous, Heat balance of..... 322
——continuous, Use of draft gages on..... 310
——down draft, Use of draft gages on..... 310
——producer-gas fired, Heat balance on.. 567
——at Newcomb Pottery..... 526
——tunnel, Use of, for heavy clay products. Lovejoy..... 628
Kirkpatrick, F. A. and Orange, W. B. "Tests of Clays and Limes by the Bureau of Standards Plasticimeetr" 170
——Discussion of hydration of anhydrite.. 69
Kittanning, Lower, clay..... 271
Klein, A. A. Discussion of tests for silica brick..... 345
Kramm, H. E. "Work on Gypsum and Anhydrite..... 65

L

Laird, J. S. "Composition of Chinese Celadon Pottery"..... 615
Lake County, Florida, clays..... 318
Landrum, R. D. Discussion of ground coat enamels..... 111
Larkin, Paul G. "Colors Produced by the Use of Soluble Metallic Salts"..... 429
Lava flows in Idaho..... 95
Lead and barium, Determination of, in glass 777
——in tin enamels for cast iron..... 705
——glass, Pots for. Gorton..... 648
Leadless tin enamels for cast iron..... 704
Leaks in glass pots, Discussion of..... 651
Lenses from MgO crystals..... 733
Levol's Method for determination of arsenic..... 744
Lime, Tests of, with plasticimeter..... 170
——Effect of, in silica brick..... 342
——Effect of addition of, to porcelain bodies..... 622
——Use of, in silica brick..... 477
——Use of, in enameling furnaces..... 645
Lime-alumina-silica system, Compounds of. 679
Limestones, Classification of, after burning 160
——in Florida..... 318
Linings for glass pots, Discussion of..... 657
Linbarger, S. C. Discussion of effect of gravity in drying..... 31
Load test, on silica brick..... 495
——for silica brick..... 340
——Discussion of, for fire brick..... 389
LOCAL SECTIONS:
——Northern Ohio Section, June 10, 1918.. 72
——Northern Ohio Section, Dec., 1918... 588
——Pittsburgh District Section, December, 1918..... 736
——New England Section, January, 1919..... 735
Loomis, George A. "Porosity and Volume Changes of Clay Fire Brick at Furnace Temperatures"..... 384
Lovejoy, Ellis. Discussion of glaze reduction..... 156
——Discussion of draft movements in flues..... 309
——Discussion of air in clay..... 714
——Discussion of terra cotta dryers..... 667
——"Use of Car Tunnel Kilns for Brick and Other Products of Crude Clays"..... 628
Lower Kittanning clay, Occurrence of, in Ohio..... 269
Lower Mercer Clay, Occurrence of, in Ohio..... 270

M

Machine, for breaking hot briquettes..... 114
Magnesia, Effect of addition of, to porcelain bodies..... 621
——ware, Manufacture of..... 440
——Sintering of, Ferguson..... 439
——ware. Yensen..... 730
Manometer used in measuring draft in flues..... 299
Manufacture of Alabaster glass..... 255
——of silica brick, Methods of..... 484
Manufactured products, table, comparative 374
Map, showing location of Fla. clay mines.. 320
Masques used in polychrome decoration.... 353
Melting of enamel frits. Poste and Rice... 221
——enamels for cast iron..... 503
Melts, optical glass, Seeds in..... 134

Metallic cobalt in enamels 112
Metamorphosis of sandstones 479
McDougal, Taine. Discussion of specific gravity test for porcelains 289
McDanel, W. W. and Riddle, F. H. "Some Types of Porcelain" 606
Micas in clays and rational analysis 405
——in Idaho granite 96
Micro-photographs of crystalline salt glazes 150
Minton, R. H. Discussion of heat balance on periodic kiln 63
——"Use of Furnace Slag as Grog in Architectural Terra Cotta Bodies" 185
——Discussion of green terra cotta glazes .. 244
——Discussion of glaze reduction 157
——Discussion of slag in terra cotta bodies 194
——Discussion of terra cotta glazes 366
Mining hydraulic limestones 166
——Florida clays 319
Minerals in clays and rational analysis 405
Mineral products, Statistics of 375
Mineralogical composition of clays 411
Milkiness in optical glass. Gelstharp 559
——in optical glass. Fenner and Ferguson 468
Mississippi clays, Occurrence of 453
Missouri white clays, Occurrence of 464
——flint clay areas 465
Mixing of raw materials for cast iron enamels 534
Modulus of rupture of porcelain bodies 610
——of rupture of silica brick 491
"Modal" composition of clays 411
Molding, Effect of electrolytes on 205
Moisture, Determination of, in glass samples 780
——Effect of, on dry strengths of clays 114
Moist closet for storing clays 29
Mold for casting glass pots 19
Molecular compounds in glass. Tillotson .. 76
Montgomery, E. T. Discussion of heat balance on periodic kiln 63
Montgomery, R. J. Discussion of tests for silica brick 350
——and Office, L. R. "Notes on the Laboratory Testing of Silica Brick" .. 338
Moore, H. W. Discussion of slag in terra cotta bodies 194
Moscow, Idaho, Clays in vicinity of 94

N

Natural gas in burning salt glazed ware 4
——hydraulic cements in N. Y. Jones 157
Neat portland cements, Discussion of 693
Newcomb Pottery, History and development of. Sheerer and Cox 518
"Norms," calculated from analyses of clays. Ries 418
North Carolina kaolins, Occurrence of 451

O

Ohio stoneware clays, Properties of. Schurecht 267
Oil-fired kiln, Zwermann tunnel 262
Opacifier, Antimony oxide used as an 502
Opaque glasses, History and composition of. Silverman 247
Opalescence in optical glass. Gelstharp ... 559
——in optical glass 468
Opal glass, Use of fluoride in 561
Optical glass, Special pots for the melting of. Bleininger 15
——Seeds in. Williams 134
Optical methods of analysis of boric acid and oxides of arsenic in. Allen and Zies 739
——Rôle of arsenic in. Allen and Zies 787
——Color affected by iron in gases. Washburn 637
——Milkiness in. Gelstharp 559
——Effect of impurities in causing milkiness in. Fenner and Ferguson ... 468, 559
——Analyses of 784
——properties of crystals in glass 603
Opal glass, Use of fluorine in 561
Orton, Edward, Jr., Biography 6
Ortman, F. B. Discussion of heat balance on periodic kiln 64
Orthosilicate in portland cement 687
Osmotic pressure, Measurement of, for dilute solution 29
Overglaze, Spraying, on terra cotta 354
Over-burning of fire-bricks, Discussion of .. 395
Oxidation of clays in car tunnel kilns 633
Oxide, zirconium, Purification of. Phillips 791
——of arsenic, Methods of analysis of. Allen and Zies 739

P

Painting terra cotta glazes 353, 429
Paper clays, Occurrence of, in America 447
Parmelee, C. W. Discussion of glaze reduction 156
——"Unusual Cause of Spalling of Sewer Pipe" 660
Pastes, Preparation of lime 173
Paving block burning in continuous kiln ... 323
Pearl ash, Analysis of 249
Pegmatite dikes in Idaho 96
Pennsylvania stoneware clays 267
——kaolins, Occurrence of 461
Pentavalent arsenic in glass 754
Peregrine, C. R. Discussion of glass pots .. 24
Periclase, Formation of 440
Periodic kiln, Test of producer-gas fired ... 35
Phillips, A. J. "Partial Purification of ZrO_2" 791
Piedmont plateau, Clays in 461
Pitot tube for measuring draft 296
Pittsburgh Plate Glass Co., Arsenic in glass of 789
Plasticimeter, Bureau of Standards 170
Plasticity of clays and limes, Measurement of 170
"Plasticity figure" for lime pastes 176
Plastic kaolins of Florida 317
Plaster, Factors influencing time of set of ... 578
——of paris, Effect of, on setting of cement 689
Plate glass, Arsenic in 787
——Tests of. Sorey 801
Platinum, Effect of, in determining arsenic in glass 757
Polychrome decoration of terra cotta .. 429, 353
Porosities, bonding clays, at different temperatures 123
——of clays, Effect of electrolytes on 209
——of silica brick 343, 489
——changes of fire brick at high temperatures 384
Pore water in terms of clay volume 609
Porcelain body slips, Viscosity of 179
——bodies, Formulas of 180
——used as grog in terra cotta 189
——Determining the structure of 287
——Some types of 606
——Characteristics of 697
——grog, Use of, in glass pot mixtures 657

Porcelain body containing no free silica... 624
——body, cone 11... 625
Portland cement, Compounds in... 679
Poste, E. P. Discussion of ground coat enamels... 111
—— and Rice, B. A. "Effect of the Degree of Smelting upon the Properties of a Frit"... 221
——Discussion of antimony oxide enamels. 511
——Discussion of acid test for enamels.... 425
——Discussion of luster of enamels... 646
Pot mixtures for optical glass pots... 16
Pots, Cooling of optical glass... 134
——glass, Causes of failure of... 648
Pot stones in glass... 596
Pottery, History of Newcomb... 518
——clays in America, Occurrence of... 446
——Conveyor stove room for... 529
——Chinese Celadon. Laird... 675
——Burning of, in car tunnel kilns... 628
Potash, Effect of, in causing milkiness... 562
——used in optical glass melts... 472
Producer-gas fired periodic kiln, Test of. Harrop... 35
——firing of continuous kiln... 323
Production of natural cements in N. Y.... 169
Pressure ratio of gases in flues... 303
Protective coatings for glass... 801
Pseudowollastonite in glass... 601
Pugged clays, Air content of... 584
Pycnometer-volumeter. Schurecht... 556

Q

Quartzite, Glenville, Description of... 8
——Physical properties of... 479
Quartz schist, in northern Idaho... 94
——Properties of... 477
——in clay, Rational analysis of... 407
——Effect of, in porcelain bodies... 697
Quarries, Limestone, in New York... 160
Quicklime, Use of, in enameling furnaces... 645

R

Radcliffe, B. S. Discussion of terra cotta glazes... 366
Rand, C. C. Discussion of compounds in glass... 90
Rational analysis of clays. Washington.. 405
Reducing conditions in gas fired kiln... 62
Refractive index, glass... 78
Refractoriness of Idaho fire clay... 97
——of silica brick... 343
——Measurement of... 385
——of saggers... 719
Refractory flint clays of Mo., Occurrence of 466
Refractories, Volume changes of, at high temperatures... 384
——ZrO_2, Purification of. Phillips... 791
Residual clays in northern Idaho... 94
Retorts for zirconia purification... 794
Rice, B. A. and Poste, E. P. Enamel frits.. 221
——Discussion of acid test for enamels.... 426
Riddle, F. H. Discussion of gravity drying 32
——and McDanel, W. W. "Some Types of Porcelain"... 606
Ries, H. Discussion of Quebec kaolin..... 12
——"The Occurrence of High-grade American Clays and Their Further Development"... 446
Robertson, H. S. and Treischel, C. "Heat Balance of Continuous Kiln"... 322
Roman cement, Production of, in N. Y..... 160
Rosendale cement, in N. Y... 160
Ross, D. W. "Silica Refractories"... 477
——Discussion of tests for silica brick.. 349, 500
Ross, D. W. Discussion of pots for optical glass... 24
Russian potash in optical glass..... 469, 560

S

Sagger grog in terra cotta bodies... 189
——clays and mixtures. Brown... 716
Salts, soluble, in terra cotta glazes..... 353, 429
Salt-water, Formation of, on optical glass.. 475
Sand carrying capacity of limes... 173
Sands, Kaolin bearing, of Fla... 318
Saxe, C. W. and Buckner, O. S. "Bonding Strengths of Clays"... 113
Schurecht, H. G. "Effect of Electrolytes on Properties of Clays"... 201
——"Properties of Some Ohio and Penna. Stoneware Clays"... 267
——"Pycnometer Operated as a Volumeter" 556
Screens for sieving enamel frits... 541
Seeds in optical glass melts. Williams..... 134
——in glass... 594
Seger volumeter, Discussion of... 556
Sellards, E. H. "The Clays of Florida"... 313
Semi-flint clay, Occurrence of, in Ohio..... 272
Setting of natural anhydrite and dead-burned gypsum... 69
——of calcined gypsum... 578
——properties of tri-calcium aluminate.... 681
Sewer pipe, Crystals in salt glazes of..... 149
——Causes of spalling of... 660
Shaw, J. B. "Antimony Oxide as an Opacifier in Cast Iron Enamels"... 502
——Discussion of electrolytes in clay..... 214
——Discussion of smelting of enamel frits.. 233
——Discussion of acid test... 424
Sheet glass, Tests of. Sorey... 801
Sheerer, M. G. "Newcomb Pottery"..... 518
Sheppard, E. S. Determination of gases in glass... 782
Shrinkage of terra cotta bodies... 192
——volume, Effect of electrolytes on..... 206
Sieve analysis of sagger grog... 724
Sifters for powdered enamels... 542
Silica brick, from Quebec quartzite..... 12
——washed from Idaho fire clay..... 97
——brick, Testing of... 338
——Effect of, in alabaster glass..... 253
——bricks in glass furnace crowns..... 598
——Separation of, from optical glass..... 559
——Use of, in cast iron enamels... 507
——refractories. Ross... 477
——content of sintered magnesia..... 440
——Use of, in sagger mixtures... 726
——Effect of, on luster of enamels..... 641
Silicates, Determination of boric acid in.... 761
Silicious clays in sagger mixtures... 726
Sillimanite, Use of, in hard porcelain..... 623
——Formation of, in glass pots... 655
——Effect of, in porcelain bodies..... 698
——in glass pot stones... 596
Sintering of magnesia. Ferguson..... 439
Sintered ground coat enamels for cast iron. 99
Silverman, A. "Alabaster Glass; History and Composition"... 247
Slag, Use of, in terra cotta bodies..... 185
Slip, Clay, for glass pot casting..... 20
——for terra cotta. Larkin... 432
——terra cotta, Composition for..... 356
Slaking of clay, Determination of structure by... 710
Soaking pit for use in preparing clay 728
Sodium sulphate freezing tests on terra cotta... 187
Soda-lime glass, Opalescence in... 561

Sodium metantimonate enamels ... 706
——sulphate scum on enamels ... 644
Softening points of Ohio and Penna. stoneware clays ... 279
——of silica brick ... 338
——of kaolin-feldspar-quartz mixtures ... 616
——Determination of, for fire brick ... 394
——Discussion of, for fire brick ... 397
Soluble salts, Use of, in terra cotta glazes ... 353
Solubility of enamels for cast iron ... 506
Solutions, Standard, for soluble colors ... 432
——Acetic acid, for testing enamels ... 422
Soper, E. K. "Fire Clays in Northern Idaho" ... 94
Sorey, T. L. "Tests of Plain and Protective Sheet Glass" ... 801
South Carolina kaolins, Occurrence of ... 456
Spark plug porcelains ... 699
Specific gravity determination on glass ... 90
——of silica brick ... 342
——test for porcelains ... 287
——test for silica brick ... 351, 485
Specifications, load test on silica brick ... 495
——for fire brick ... 389
Spencer Lens Co., Arsenic in glasses of ... 789
Spraying of terra cotta glazes ... 353, 429
Spurrier, H. "Use of Dense Solutions in Determining the Structure of Porcelain" ... 287
——Discussion of sp. gr. tests for porcelains ... 289
——"Nature of the Air Content of Pugged Clays" ... 584
——"Methods for the Determination of Air in Plastic Clays" ... 710, 715
Staley, H. F. "Ground Coat Enamels for Cast Iron" ... 99, 111
——"Preparation and Application of Enamels for Cast Iron" ... 534
——"Enamels for Cast Iron" ... 703
——"The Control of the Luster of Enamels" ... 640
——Discussion of glaze reduction ... 159
——Discussion of electrolytes in clays ... 214
——Discussion of Sb_2O_3 enamels ... 511
——Discussion of enamel frits ... 235
Stains, green, for terra cotta ... 238
Static pressure of gases in flues ... 294
Stack, Pressure of gases in ... 294
Still, Platinum, used in determination of arsenic ... 758
Stirring cast iron enamels ... 539
——optical glass melts ... 134
——of gypsum pastes, Effect of ... 581
Stoneware clays of Ohio and Penna ... 267
Strength of special portland cements ... 689
Strength of terra cotta bodies ... 192
——of clays, Effect of electrolytes on ... 201
——Crushing, of silica brick ... 492
Storage of enamel raw materials ... 534
——Effect of, on cement and concrete ... 694
Stones in glass, Source of ... 654
——Identification of, in glass ... 594
Stove room with conveyor ... 529
Striae in glass ... 594
Stull, R. T. Discussion of glaze reduction ... 158
Sulphur compounds, Effects of, on enamels ... 644
Sulphur dioxide in glass bubbles ... 139
——in glass, Determination of ... 782
Sulphates in optical glass as a source of milkiness ... 561, 473
Summer meeting, A. C. S. ... 141
Swalm, P. H. Discussion of slag in terra cotta bodies ... 193
St. Remi, Quebec, kaolin ... 8

T

Table, enameling, Description of ... 550
Tails in glass ... 597
Tannic acid, Effect of, in clays ... 203
Temperature, Effect of, on gravity drying ... 28
——Effect of, on set of gypsum ... 583
——in enameling furnaces ... 554
——control in glass melting ... 471
——in fining optical glass ... 131
——distribution in car tunnel kilns ... 633
Tensile strengths of cement mortars ... 690
Tennessee bond clays, Occurrence of ... 456
Terra cotta bodies, Use of slag in ... 185
——glaze, Cobalt-uranium ... 238
——Polychrome decoration of ... 353
——glazes, Use of salts in ... 429
——dryers ... 667
Testing silica brick ... 338
——of porcelains by solutions ... 287
Tillotson, E. W. Discussion of pots for optical glass ... 23
——"Relation between Physical Properties and Chemical Composition of Glass" ... 76, 91
Tillyer, E. D. Discussion of compounds in glass ... 89
Tin enamels, Fritting ... 539
——for cast iron. Staley ... 703
Tin oxide in enamels, Substitute for ... 502
Tionesta clays, Occurrence of, in Ohio ... 269
Treischel, C. and Robertson, H. S. "An Attempted Heat Balance on a Continuous Kiln" ... 322
——Discussion of heat balance on continuous kiln ... 336
Tricalcium aluminate, Properties of ... 680
Tridymite, Optical properties of ... 604
——in silica brick ... 488
Truman, Gail. Discussion of terra cotta glazes ... 365
Tunnel kiln, Operation of. Zwermann ... 262
——Use of, for heavy clay products ... 628
Tunnel dryers for terra cotta ... 666

U

Underglaze colors, Formulas of ... 354
Uranium-cobalt glaze for terra cotta ... 238
U. S. Brick Co., Tests of periodic kilns at ... 35
U. S. Fuel Administration ... 2

V

Vapor pressure, Influence of, in drying ... 27
Velocity of gases in flues ... 294
Vicat apparatus, Use of, in measuring set of plaster ... 578
Viscosity, of optical glass ... 135
——of clays and porcelain body slips ... 179
——Measurement of, of gypsum pastes ... 580
——of enamels, Effect of, on crystallization ... 640
Virginia clays, Occurrence of ... 462
Volatilization, of glass, Effect of, on index of refraction ... 90
——from enamel frits ... 221
——in optical glass melts ... 560
——of arsenic from glass ... 741
——of iron chloride ... 799

Volcanic tuff, in Idaho..... 95
Volumeter, Pycnometer used as..... 556

W

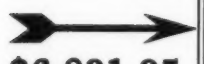
Wallastonite in glass..... 601
Warpage of Ohio and Penna. stoneware clays..... 279
Washburn, E. W. Committee on ceramics 5
——"Effect of Gravitation upon the Drying of Ceramic Ware"..... 25
——Discussion of glaze reduction..... 158
——"Presence of Iron in the Furnace Atmosphere as a Source of Color in the Manufacture of Optical Glass"..... 637
Washing, Idaho fire clays..... 97
——Ohio and Penna. stoneware clays..... 273
——Florida kaolins..... 318
——Georgia kaolins..... 451
Washington, H. S. "Calculation of the Rational Analysis of Clays"..... 405
Water glass, Stability of..... 86
——glass as binder for carborundum..... 268
——of plasticity, Effect of electrolytes on.. 205
Waste heat for terra cotta dryers..... 666
Watts, A. S. Discussion of gravity in drying..... 31
——Discussion of sp. gr. test for porcelain.. 290
Wet pan, Use of, for sagger clay..... 728
Wherr's method for determination of B_2O_3 in glass..... 761
Whitaker, F. A. Discussion of electrolytes in clay..... 213
Williams, A. E. Discussion of composition of glass..... 90
——"Observations on the Formation of Seed in Optical Glass Melts" 134, 137
Wilson, Hewitt. "A Cobalt-Uranium Green Glaze for Terra Cotta". 238, 244
——Discussion of terra cotta glazes..... 366
——"Polychrome Decoration of Terra Cotta with Soluble Metallic Salts"..... 353
Windsor, N. S., Anhydrite from..... 65

Y

Yellow colors, Soluble blends for terra cotta. Larkin..... 436
Yensen, Trygve D. "Magnesia Ware".... 730

Z

Zinc oxide, Effect of, in antimony enamels.. 707
——in optical glass, Determination of..... 712
Zirconium oxide, Purification of. Phillips.. 791
Zwermann, Carl H. "The Zwermann Tunnel Kiln and Its Operation".. 262



$6,831.35

The Value of Fuel Saved in One Year.

¶ Actual records were kept for 365 days of the burning of 9-inch, high-grade, refractory brick in one continuous tunnel kiln and in seven 30-foot round kilns, during which time 5,110,000 brick were burned in the tunnel kiln as against 5,040,000 in the seven round kilns.

¶ But this isn't all—the actual labor saving amounted to $5,808.00. Taking into consideration the necessary items of depreciation, interest on plant, maintenance and repairs, the average yearly cost for burning 1,000 brick in the continuous tunnel kiln system was $2.95 as against $6.20 in the round kilns.

¶ If you are really interested in the greater efficiency of burning, you will let us tell you more about the actual accomplishments of

The Didier-March Continuous Railroad Tunnel Kiln

Didier-March Company

GEO. A. BALZ, *Gen'l Mgr.*

Perth Amboy, New Jersey

Contractors ***Manufacturers of Refractories*** ***Engineers***

The Mandle Clay Mining Company

ESTABLISHED 40 YEARS *OFFICE: ST. LOUIS, MO*

Mines Located in Tennessee and Kentucky

Our materials STANDARD for manufacturing every line of product in which are used BALL, WAD, SAGGER, and HIGH GRADE REFRACTORY BOND CLAYS.

For Pottery and Porcelain of all kinds
For Glass Industries and Crucible Manufacturers

Quality *Uniformity* *Experience*

Edgar QUALITY *Clays*

REALLY washed—Highest percentage clay substance

Brands	*Produced by*
Edgar Florida Kaolin	*Edgar Plastic Kaolin Co.*
Edgar Georgia Paper Clay and Kaolin	*Edgar Brothers Co.*
Lake County Florida Clay	*Lake County Clay Co.*

One Management—Office, Metuchen, N. J.

Application for Membership in the American Ceramic Society

Approving the objects of the American Ceramic Society, I hereby apply for membership in the Society, and subscribe for the "Journal of the American Ceramic Society." Enclosed find $10.00 for initiation fee and annual membership dues, $4.00 of which is for one year's subscription to the Journal.

NAME ADDRESS DATE

....

Subscription to the "Journal of the American Ceramic Society"

Enclosed find $6.00 in payment of one year's subscription to the "Journal of the American Ceramic Society." Subscription to start with the first number of the Journal.

NAME ADDRESS DATE

....

J. T. BRAMLETT

HIGH GRADE
PLASTIC FIRE CLAY

A Bonding Material Suitable for Crucibles, Glass Pots, Etc.
Sold Direct to Consumer

ENID, MISSISSIPPI

NOTICE

In order to increase the stock of certain volumes of the Transactions of the American Ceramic Society, the Secretary of the Society has been authorized by the Board of Trustees to purchase a limited number of copies of Volumes II, V, IX, X, XII, and XIX, at five dollars each. Members or former members who are willing to dispose of their copies may communicate with

CHARLES F. BINNS, Secretary, American Ceramic Society
Alfred, New York

Drying Systems for Ceramic Wares

The Carrier Drying System plus Carrier Engineering insure ware that is dried properly and evenly. The loss due to seconds and imperfect pieces is greatly reduced and the time of drying is considerably shortened.

Carrier Systems with automatic humidity and temperature control can be installed complete, or automatic control can be applied to existing installations. Write for complete information.

Carrier Engineering Corporation
39 Cortlandt Street, New York
Boston Philadelphia Buffalo Chicago

Carrier
AIR CONDITIONING AND DRYING EQUIPMENT

80

Save Fuel Increase Output

SIL-O-CEL

PREVENTS HEAT PENETRATION

TRADE MARK REGISTERED U.S. PATENT OFFICE

MADE FROM CELITE

Sil-O-Cel Insulation does both.

It prevents heat loss and fuel waste from kilns.

Sil-O-Cel Insulation insures a more uniform interior temperature in kilns, resulting in fewer under- and over-burned pieces.

Write for detailed information on kiln insulation.

CELITE PRODUCTS CO.

New York Pittsburgh Chicago
Los Angeles San Francisco

Journal of the American Ceramic Society

ADVERTISING RATES

1	page	$40.00	per insertion
½	"	25.00	" "
¼	"	15.00	" "
⅛	"	10.00	" "

20% discount for 12 continuous insertions

For further particulars address

COMMITTEE ON PUBLICATIONS,
L. E. Barringer, Chairman,
Schenectady, N. Y.

American Ceramic Society,
211 Church St.,
Easton, Pa.

Alundum NORTON **Crystolon**

AND

The modern abrasives which make up the

NORTON GRINDING WHEELS

have played an important part in the evolution of grinding.

Improved methods of wheel manufacture, co-operating with modern research and experimental laboratories, have helped develop a Norton Grinding Wheel of the right grain and grade for every grinding job.

Our experience is at your service in selecting a wheel or solving a difficult grinding problem.

NORTON COMPANY

WORCESTER, MASS.

Alundum Plant: Niagara Falls, N. Y.
Crystolon Plant: Chippawa, Canada

New York Store: 151 Chambers Street
Chicago Store: 11 No. Jefferson St.

(600)

THE ROESSLER & HASSLACHER CHEMICAL COMPANY.

NEW YORK.

"America's Leading Ceramic Material House"

RHCCO

Al

CHEMICALS

MINERALS AND OXIDES

Dependable **Reliable**

Economical

SUPERIOR UNIFORM PRODUCTS
THAT SATISFY

Branches

Chicago	Cleveland	Cincinnati
Boston	Philadelphia	Kansas City
New Orleans		San Francisco

"Proctor" DRYERS

For Clay Products

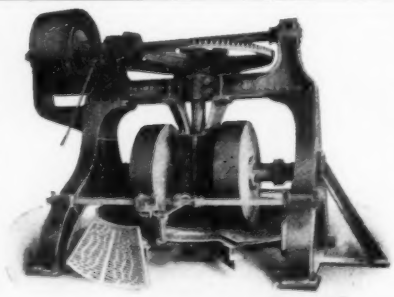
MAKE BETTER WARE AT A LOWER COST

WRITE FOR CATALOG

The Philadelphia Textile Machinery Co.

Seventh Street and Tabor Road

Philadelphia, Pa.



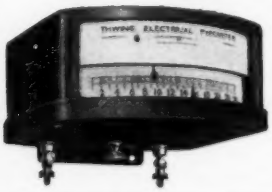
American Nine Foot Dry Pan

Here's one of our famous line of pans. They are built to handle a lot of clay and they do it. Nothing shoddy about this pan, that's why it makes good and works steadily without trouble. Get our pan printed matter. We surely have a pan to do your work better and with less trouble and expense than you are now doing it. Let us prove it.

The American Clay Machinery Co.
Bucyrus, O.

Thwing Electrical Pyrometer Systems

High resistance indicating and multiple-recording instruments for accurate temperature measurements at all stages of the burning process.



The use of a Thwing Pyrometer System is a protection against fuel waste and ruined product from improper burning, and is a big help in getting better results with inexperienced men. Ask for our latest catalog.

THWING INSTRUMENT CO.
3335 Lancaster Ave. 34 PHILADELPHIA

Drakenfeld

COLORS · MATERIALS
CHEMICALS · OXIDES
for
Pottery, Glass & Enameled Ware
Manufacturers

B. F. DRAKENFELD & CO.
INCORPORATED
NEW YORK

DURABILITY

Is the vital quality of the brick that are used in copper furnaces and open-hearth steel furnaces. And that's why the Laclede-Christy Bauxite Brick have proved so remarkably popular--they stand the test.

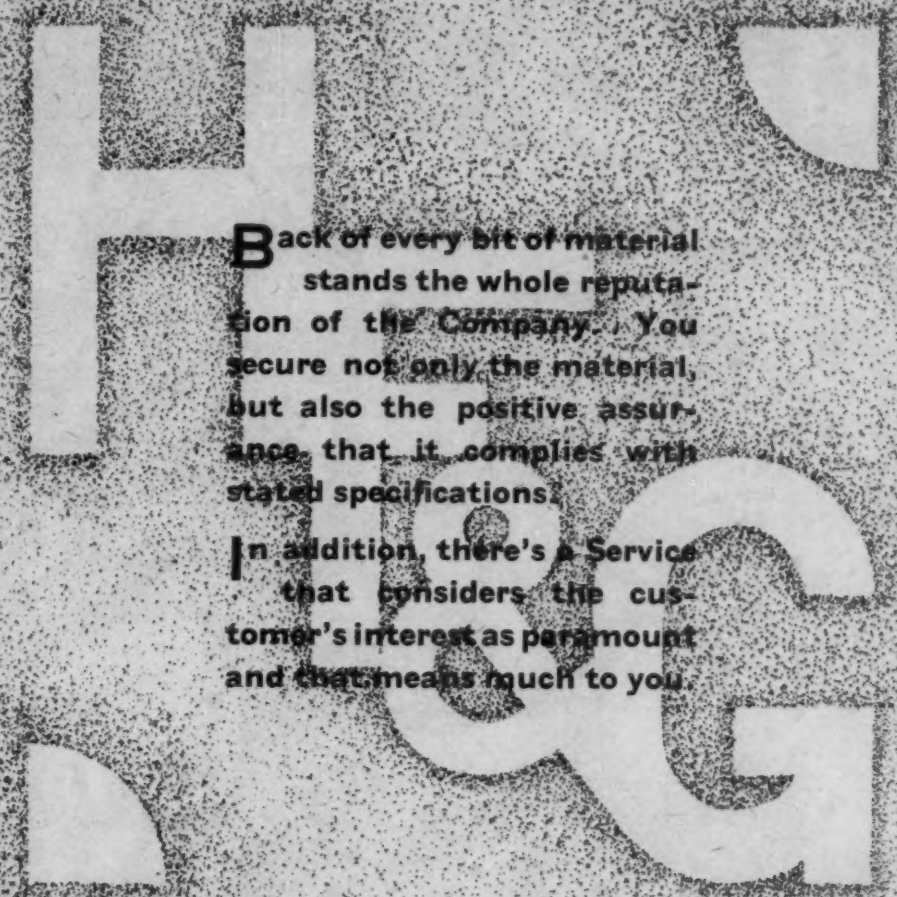
L-C Bauxite Brick are being used as a substitute for Magnesite Brick with great success--they are cheaper and in many cases have proved more durable.

You can't afford to gamble on refractories of inferior quality **now**. Shut-downs at this time are disastrous. Be on the safe side--use L-C Bauxite Brick in the walls of your furnaces. Tell us your requirements and let us quote you prices.

LACLEDE-CHRISTY

Everything in Clay Products

Railway Exchange Bldg., St. Louis, Mo.

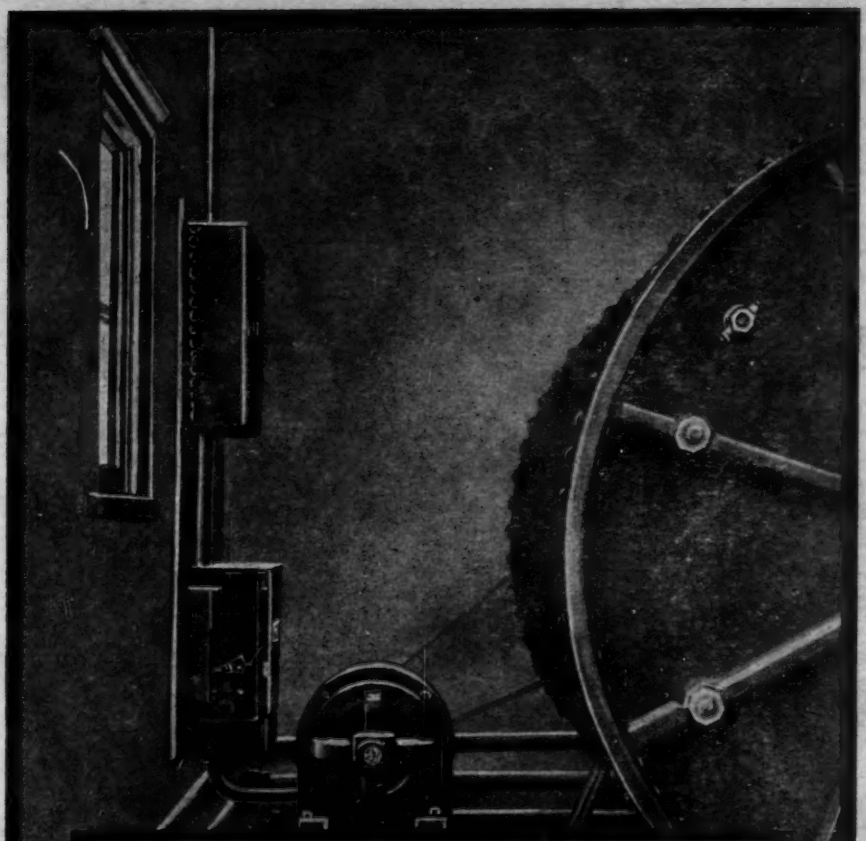


Back of every bit of material stands the whole reputation of the Company. You secure not only the material, but also the positive assurance that it complies with stated specifications.

In addition, there's a Service that considers the customer's interest as paramount and that means much to you.

THE HARSHAW FULLER AND GOODWIN CO.

CLEVELAND · NEW YORK · PHILADELPHIA



To Save is to Serve

G-E Individual Motor Drive saves many dollars formerly spent for upkeep of line shafts, hangers, pulleys and belts.

It is safer—cleaner—permits of better use of floor space, eliminates shadows from belts, which mean better light.

It saves power, consequently money, as the power consumption is proportional to work done. You can operate any individual machine and not have to have the whole power system in operation.

There is a certainty, smoothness and sustained speed meaning immediate dollars saved—less wastage—greater safety to operatives.

Let us send you the address of a plant in your vicinity equipped with G-E Motors and investigate for yourself.

43-62

General Electric Company

General Office: Schenectady, N. Y. Sales offices in all large cities